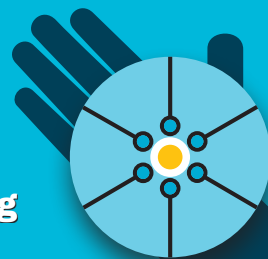




SIRikt 2014

ZBORNİK POVZETKOV PRISPEVKOV

Učencu naproti
Child Led Learning



Mednarodna konferenca **Splet izobraževanja in raziskovanja z IKT**
SIRikt 2014 • Kranjska Gora, 28.-30. maj 2014

International Conference **Enabling Education and Research with ICT**
SIRikt 2014 • Kranjska Gora, 28 - 30 May 2014

Organizatorja konference:



Soorganizatorja konference:



Zbornik je nastal v okviru projektov *E-učbeniki s poudarkom naravoslovnih predmetov v osnovni šoli in e-Šolska torba*.



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MINISTRSTVO ZA IZOBRAŽEVANJE, ZNANOST IN ŠPORT



Naložba v vašo prihodnost
OPERACIJO DELNO FINANCIRA EVROPSKA UNIJA
Evropski socialni sklad



Naložba v vašo prihodnost
OPERACIJO DELNO FINANCIRA EVROPSKA UNIJA
Evropski sklad za regionalni razvoj

Operacijo delno financirata Evropska unija iz Evropskega socialnega sklada/
Evropskega sklada za regionalni razvoj ter Ministrstvo za izobraževanje, znanost in šport.

Mednarodna konferenca

Splet izobraževanja in raziskovanja z IKT

SIRikt 2014

ZBORNIK POVZETKOV PRISPEVKOV

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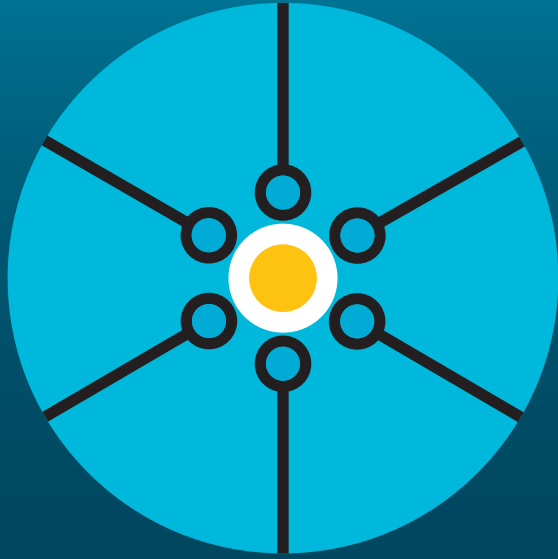
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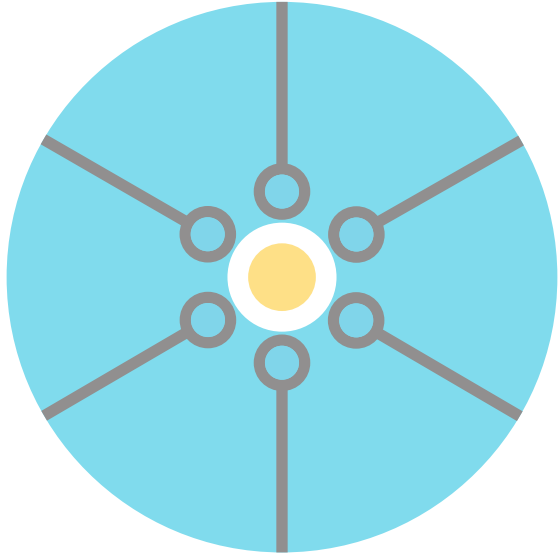
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Uvodnik • Foreword



Bodite sprememba, bodite z nami #SIRikt 2014!

Be the change, be with us #SIRikt 2014

8. mednarodna konferenca SIRikt 2014 je zaznamovana s spremembami in osredotočenostjo na učence.

Tako kot prejšnje je sestavljena iz več dogodkov, ki se odvijajo ves teden:

- Spletna okrogla miza na temo **Kakšno šolo si želimo?**, na kateri bodo gosti učenci,
- **Videokonferenčni dan**, na katerega smo povabili posebne goste po izboru učencev,
- Konferenca **Arnes 2014 – Izmenjujemo znanje**,
- Konferenca **Na poti k e-kompetentni šoli**,
- Zaključna konferenca projekta **E-učbeniki s poudarkom naravoslovnih predmetov v osnovni šoli**,
- Nacionalna konferenca eTwinning – **dogodek KONFeT**.

Letošnji SIRikt poteka v organizaciji Zavoda RS za šolstvo, naslov osrednje konference “Na poti k e-kompetentni šoli” pa je **Učencu naproti**. Želeli smo čim bolj izostriti razmišljanje o tem, kakšni so naši učenci, kako se učijo, kakšne so njihove potrebe in želje. Veliko pozornosti smo v preteklosti namenjali poučevanju, zato smo letos poudarili temo učenja in vključili v konferenčne dogodke tudi učence. Ne samo to, otvoritveni plenarni predavanji bosta imela učenca. Želimo namreč, da bi se v prihodnosti bolj slišal glas mladih.

Konferenca se odvija pod okriljem dveh projektov, E-šolske torbe in E-učbenikov s poudarkom naravoslovnih predmetov v osnovni šoli. Nastale e-učbenike in e-storitve šole že preskušajo, imamo razrede, ki pri pouku uporabljajo tablice, zato so izbrani prispevki na letošnjem SIRiktu v veliki meri posvečeni primerom dobre rabe na tem področju.

Vseh prispevkov je letos 174, predstavili pa se bodo v različnih oblikah. Ob že ustaljenih plenarnih predavanjih, kratkih predstavitvah, NeTičNeMiš-u in Odprti učilnici je letošnja novost Sejem Daj-Dam, s katerim želimo spodbuditi učitelje k čim večji izmenjavi svojih izkušenj in primerov dobre prakse ter s tem k boljšemu medsebojnemu sodelovanju.

Tudi letošnja konferenca je “brez papirja” in vsa predavanja ter predstavitve bomo prenašali videokonferenčno. Udeleženci bodo lahko med predavanji več čas aktivni in sodelovalni s pomočjo programa Kliker, ves čas pa bomo seveda tudi družabno omreženi. Na vseh predavanjih in predstavitev bodo udeleženci imeli možnost sodelovanja s “tvitanjem” – v vseh predavalnicah bo vzpostavljena tvit stena, ki bo služila temu, da bomo lahko sproti spremljali odzive in vprašanja #sirikt.

Število obiskovalcev je tudi letos veliko, skoraj 1200. To pomeni, da je konferenca postala stalnica na področju izobraževanja. Kot vsako leto jo tudi letos s svojo pestrostjo različnosti bogatijo mednarodni in domači strokovnjaki, ki se na njej predstavljajo, vsako leto pa bolj in bolj vključujemo tudi učence.

Torej, še enkrat zahvala in povabilo vsem: Bodite sprememba, bodite z nami!

8th International SIRikt conference 2014 is marked by change and focus on students.

As in the past, several events are taking place all week:

- Online Round Table with the title **What school do we want?** with students as guests
- **Videoconference Day**, with guests selected by students
- **ARNES 2014 Conference – Transferring Knowledge**,
- Conference **The Way towards E-competent School**
- Closing conference of the **E-studentbooks project focusing on science subjects in primary school**
- National eTwinning Conference **KONFeT** Event

This year's SIRikt is organized by the National Education Institute, and the main conference “Towards an e-competent school” has the title **Child Led Learning**. We wanted to focus our thinking on what our students are like, how they learn, and what their needs and desires are. Much attention was devoted in the past to teaching, so this year we highlighted the topic of learning and the conference events include students. Not only that, the opening plenary lectures will be given by the learners themselves. Our wish is that in the future we hear the voice of young people even more.

The conference is held under the auspices of the two projects, E-schoolbag and E-student books focusing on science subjects in primary school. The results of e-student books and e-services have already been tested in schools, we have classes that use tablets, therefore selected contributions at this year's SIRikt are largely devoted to examples of good practice in this area.

The number of presentations this year is 174, which will be presented in various forms. Having already established plenary lectures, short presentations, TeachMeet and Open Space, this year's novelty Give-and-Take Fair aims to encourage teachers to maximize sharing their experiences and examples of good use, and help to increase collaboration.

This year's conference is "paperless" and all lectures and presentations will be broadcast via video-conference. Participants will be able to participate during lectures more actively with the help of the program Kliker and social networking will take place at all times. During all lectures and presentations participants will be able to tweet and since in all session rooms Tweet wall will be set up, we will keep track of responses and questions #sirikt.

The number of participants this year is great, almost 1200. This means that the conference has become renowned in the field of education. International and domestic experts who present their work each year, enrich the variety and diversity of content, and we also include students.

So once again, thanks to everyone, and another invitation: Be the change, be with us!

NIVES KREUH

Vodja SIRikt-a/Head of SIRikt





Konferenca Arnes 2014

•

ARNES 2014 Conference

Konferenca Arnes 2014 – Izmenjujemo znanje



Izmenjava znanja je meje klasičnih učilnic presegla že v prejšnjem stoletju, sodobna tehnologija pa nam s svojim hitrim napredkom omogoča vedno enostavnejše in učinkovitejše metode posredovanja znanja. V današnjem času na ta način poučevanje ni več zgolj domena vrtcev, šol in fakultet, tehnologija podaja roko tudi raziskovalnim inštitutom, muzejem, galerijam in drugim organizacijam, ki tako lahko delijo svoje vsebine in akumulirano znanje. S pomočjo tehnologije lahko danes presegamo tako fizične omejitve kot tudi meje v našem dojetanju izmenjave znanja, saj o globalni učilnici ne razmišljamo več zgolj s stališča preseganja mej, temveč tudi s stališča ciljnih skupin, ki bi jih naše vsebine utegnile zanimati.

Konferenco bomo začeli s predavanjem, na katerem si bomo ogledali, kako vzpostaviti platformo, prek katere bo mogoče varno izvajati preverjanje znanja s pomočjo sodobnih tehnologij. Izvedeli bomo, kako lahko predavanja v celoti izvajamo na daljavo ob pomoči sodobnih tehnologij. S tem seveda tudi nismo več omejeni le na Slovenijo, saj lahko našo publiko dosežemo tudi drugje. Gotovo večina med vami že pozna **iversity.org**, največjo evropsko platformo za odprto izobraževanje na daljavo, tokrat pa bomo imeli priložnost izvedeti, kako je bila sama platforma vzpostavljena. Ogledali si bomo, kako odprta izobraževanja na daljavo izvajajo na Hrvaškem in kaj smo na tem področju za vas pripravili na Arnesu. Glede na to, da je “izložba” večine izobraževalnih organizacij še vedno spletna stran, si bomo ogledali, kaj nas lahko doleti, če za našo spletno stran ne skrbimo, kako lahko nesrečne dogodke v povezavi z našimi spletnimi stranmi preprečimo, in dobili koristne namige o aktualnih sistemih za upravljanje z vsebinami spletnih strani. Konferenco bomo zaključili s pregledom storitev, ki jih za vas zagotavljamo na Arnesu. Poleg konkretnih primerov uporabe že uveljavljenih storitev, ki jih verjetno že dobro poznate, vam bomo predstavili tudi dve novi, ki vam bosta znatno olajšali komunikacijo z vašimi ciljnimi javnostmi.

Konferenca Arnes povezuje področje izobraževanja, raziskovanja ter kulture in je namenjena širokemu krogu obiskovalcev, saj pokriva tako uporabniške kot tudi sistemske vidike uporabe novih tehnologij.

ARNES 2014 Conference – Knowledge Transfer

The exchange of knowledge had already gone beyond the walls of classic classrooms in the previous century, but modern technology with its rapid advances provides ever simpler and more efficient methods for transferring knowledge. In today's world, learning is thus no longer the exclusive domain of nurseries, schools and universities. Technology goes hand in hand with research institutes, museums, galleries and other organizations, for which it provides a means for sharing their content and accumulated knowledge. Technology nowadays allows us to overcome our physical limitations as well as the limits in our understanding of the exchange of knowledge, since we no longer think of the global classroom simply in terms of overcoming borders, but also from the point of view of target audiences that might be interested in our content.

The conference will kick-off with a lecture on how to establish a platform with which we will be able to implement knowledge testing using modern technology. We will learn how modern technologies allow us to deliver lectures remotely in their entirety, regardless of the distances involved. This of course means that we are no longer limited to Slovenia, since our audience can be anywhere. Most of you are probably already familiar with **iversity.org**, Europe's biggest open distance learning platform – on this occasion you will also have the opportunity to get a better look at its underpinnings. We will examine how open distance learning has been applied in Croatia and what ARNES has prepared in this field. Considering that the “storefront” of most educational organizations is still their website, we will take a look at what can happen if insufficient attention is paid to this aspect, how to prevent unpleasant accidents related to our web pages and learn a few useful tips for current website content management systems. The conference will be concluded by an overview of the services ARNES provides. In addition to practical use cases for established services that you are already familiar with, we will demonstrate two services that will significantly simplify communications with target audiences.

The ARNES Conference brings together the fields of education, research and culture and is intended for a wide range of attendees, since it covers new technologies from the perspective of the user as well as the system.

1.

Plenarna predavanja • Plenary Lectures



Digitalni postopek ocenjevanja na norveških univerzah – Od analognih do elektronskih izpitov v digitalni dobi

The digital assessment process in Norwegian universities – From analogue to electronic examinations in the digital era

Freddy Barstad • UNINETT AS

Povzetek: Današnji postopki ocenjevanja v visokošolskih ustanovah na Norveškem so daleč od digitalnega napredka, ki se razvija in uveljavlja na drugih področjih družbe. Digitalni “domačini”, ki so danes včlanjeni v visokošolske ustanove na Norveškem, se učijo in izobražujejo s prenosnimi računalniki in mobilnimi telefoni, ko pridejo na dolgo pričakovane izpite, pa morajo svoje znanje izkazati s papirjem in svinčnikom. Predavatelji nestrpno čakajo, da študentski izdelki prispejo po navadni pošti, in nato zapravijo veliko časa za prebiranje nečitljive pisave. Administrativno osebje porabi čas za štetje, kopiranje, preverjanje, pakiranje in pošiljanje izpitnih pol pregledovalcem.

Na tem predavanju si bomo ogledali projekte, začete na nacionalnih in lokalnih ravneh, ki se osredotočajo na preobrazbo postopka ocenjevanja z današnjega papirnega na v celoti digitalnega. Z vzpostavitvijo nacionalnega projekta za digitalno visokošolsko ocenjevanje in s povabilom vsem univerzam v državni lasti k sodelovanju v skupni pobudi, je cilj projekta deliti znanje o izzivih in rezultatih ter zagotoviti sodelovanje med univerzami. Odziv na to povabilo je bil izjemen: v tem nacionalnem projektu zdaj sodeluje 76 entitet, ki zastopajo 27 različnih visokošolskih ustanov. Najpomembnejši dejavnik je že od prvega dne tehnološka perspektiva projekta, ki ima zdaj vodilno vlogo pri delu, povezanem s tehnološkimi vidiki postopka digitalnega ocenjevanja.

Predstavitve se bo zlasti osredotočila na ta področja ter perspektive za uspeh z nacionalnim projektom in širokim sodelovanjem:

- sodelovanje večine norveških univerz,
- uporaba inovativnega postopka javne nabave v sodelovanju s ponudniki na trgu,
- vpliv digitalnih rešitev na nove načine učenja in ocenjevanja,
- reševanje pravnih vprašanj,
- vzpostavljanje nacionalnega storitvenega okolja za integracijo.

Abstract: Today's assessment practices in higher education in Norway are a far cry from the digital advancements that are being developed and embraced in other areas of society. The digital “natives” who attend higher education institutions in Norway today study and learn with their laptops/mobiles but when they turn up for their long-awaited examination, they are required to reproduce their knowledge with pen and paper. Academics eagerly wait for the students' papers to arrive by snail mail, and spend their time interpreting the illegible hand writing while administrators spend their days counting, copying, double-checking, packing, and sending examination papers from student to examiner. This talk looks at the projects that have been initiated at a national and a local level which focus on the transformation of the traditional paper-based assessment process in place today to an end-to-end digital process. By establishing a National Project for Digital Assessment in Higher Education and inviting all state owned universities to participate in a joint collaboration, the project's goal is to share challenges and results and establish cooperation between the universities. The response to this invitation has been overwhelming, and 76 named resources representing 27 different higher education institutions are now participating in this national project. The technological perspective of the project has been a high priority from day one, and the project has taken a leading role in work related to the technological aspects of the digital assessment process. The presentation will focus particularly on these areas, and the perspective of succeeding in with a national project and joint collaboration in a broad scale:

- A joint collaboration including most Norwegian Universities
- The use of an innovative public procurement process – in collaboration with vendor market
- How digital solutions might influence new ways of learning and assessment
- Solving legal issues
- Establishing a national service platform for integration.



Vključevanje storitve vox.arnes.si v izobraževalni proces

Integrating vox.arnes.si services into the educational process

Benjamin Lesjak • IPRID

Povzetek: Arnesovo videokonferenčno storitev **vox.arnes.si** lahko redno vključujemo v procese poučevanja in sodelovanja, predvsem pa je pogosto v uporabi pri izvedbi izobraževanj na daljavo, sestankih, gostujočih predavanjih, zagovorih zaključnih del študentov ali pri širjenju občinstva, ki se predavanja fizično ne more udeležiti. Storitev **vox.arnes.si** je zelo robustna in omogoča zadovoljivo ter razumljivo povezavo tudi v mejnih razmerah, predvsem pa je poleg prenosa videa in zvoka zelo uporabna zaradi možnosti širjenja vsebin in dodatnih komunikacijskih kanalov udeležencem videokonference. Predstavljene bodo različne dobre prakse uporabe storitve **vox.arnes.si** s praktičnimi prikazi in odzivi udeležencev oziroma študentov na uporabo videokonferenc pri izobraževanju.

Abstract: ARNES' **vox.arnes.si** videoconferencing service can be integrated into regular teaching and collaboration processes, especially distance teaching implementations, remote meetings, guest lectures, and distance student thesis examinations or for extending target audiences to those who cannot attend in person. The **vox.arnes.si** service is very robust and provides an acceptable and intelligible connection even in borderline conditions. It is, however, especially useful because of the content distribution possibilities and additional communications channels that it provides to videoconference participants in addition to video and audio. Various examples of best practice for using the **vox.arnes.si** services will be shown along with practical demonstrations as well as participant and/or student responses to using videoconferencing in education.

Postavitev okolja za množično spletno učenje MOOC: izzivi in rešitve

Building a MOOC platform: challenges and solutions

Dimitrij Filatov • Iversity

Povzetek: Množični odprti spletni tečaji (angl. MOOC oziroma Massive Online Open Courses) so postali izjemno priljubljeni ter vplivajo na stotine ustanov in milijone uporabnikov po vsem svetu. Novi pristopi k učenju odpirajo nove tehnološke izzive. Sodobno okolje MOOC ni samo množica standardnih gradnikov za sisteme upravljanja vsebine, kot so vdelani videoposnetki, forumi za razprave in strani wiki. Zahteva namreč funkcije in tehnologije, kot so zanesljivi algoritmi za preverjanje s strani drugih z istega področja, prilagodljivo učenje in nadzorovani izpiti na daljavo. Mnoge od teh funkcij so še vedno preizkusnega značaja in se bodo razvijale v nepredvidljive smeri.

Abstract: MOOCs (Massive Online Open Courses) have gained incredible popularity, and their effects have been felt by hundreds of institutions and millions of users all around the world. New learning approaches bring new technological challenges. A modern MOOC platform is not just a set of standard CMS blocks like embedded videos, discussion forums and wiki pages. It requires brand new features and technologies, like reliable peer review algorithms, adaptive learning and remote proctored exams. Many of these features are still in the experimental phase and will evolve in unpredictable directions.



Prvič je najtežje: MOOC CARNet Moodle

The first time is the hardest: CARNet Moodle MOOC

Gordana Jugo • CARNet

Povzetek: CARNet je januarja 2014 predstavil svoj prvi množični odprti spletni tečaj za strokovni razvoj učiteljev, imenovan Moodle MOOC, ki je pritegnil več kot 400 sodelujočih iz Hrvaške in s širšega območja. Odkrijte, kako je CARNetova skupina spletni tečaj za skupino 15 sodelujočih pretvorila v množični tečaj z več kot 400 udeleženci in kako so tečaj sprejeli sodelujoči, med katerimi jih več kot 70 odstotkov še nikoli ni sodelovalo v množičnem odprtem spletnem tečaju.

Abstract: In January 2014, CARNet launched its first massive open on-line course for the professional development of teachers – Moodle MOOC, which were attended by more than 400 participants from Croatia and the wider region. Learn how the CARNet team transformed an on-line course for a group of 15 participants into a massive course for over 400 participants, and how the course has been received by the participants, more than 70 % of whom had never participated in a MOOC before.

Kako smo postavili spletni tečaj (MOOC) o varni rabi interneta in sodobnih tehnologij

How we set-up a MOOC on the safe use of the Internet and modern technologies

Domen Božeglav • Arnes
Radovan Krajnc • Zavod RS za šolstvo

Povzetek: Internet in sodobne tehnološke rešitve nas dandanes spremljajo praktično na vsakem koraku, pogosto pa zanemarimo tveganja, katerim smo pri njihovi uporabi izpostavljeni. Na Arnesu smo zato v sodelovanju z več institucijami pripravili spletni tečaj, ki vas bo seznanil z nevarnostmi, katerim se na spletu in pri uporabi tehnologij izpostavljate. Hkrati vam bo prek video predavanj in kvizov podal znanje, ki ga potrebujete za zaščito svoje naprave, osebnih podatkov zdravja in okolja. Na predavanju si bomo ogledali, kako je potekalo postavljanje tečaja v okolju spletnih učilnic ter vas opozorili na nekaj ključnih pasti, katerim ste izpostavljeni pri uporabi interneta in sodobnih tehnologij.

Abstract: The Internet and modern technological solutions are now part of virtually every step of our lives and we often forget about the risks their use exposes us to. In collaboration with several institutions, ARNES has thus prepared a web course to educate users about the dangers they are exposed to when using the Web and technology in general. Through the use of video lectures and quizzes it will also give you the knowledge necessary to protect your devices, personal data, health and the environment. The lecture will examine how the course was set-up in a web classroom environment and alert you to several key pitfalls one is exposed to when using the Internet and modern technologies.



Raziskovalna in izobraževalna omrežja ter globalne pobude za učenje

Research and Education Networks and Global Learning Initiatives

Domenico Vicinanza • DANTE

Povzetek: Raziskovalna in izobraževalna omrežja (omrežja NREN in GEANT) imajo vedno večjo vlogo pri deljenju znanja, njihov mandat in prisotnost na področju izobraževanja pa vsekakor rasteta. Na tem predavanju bomo raziskali možnosti in priložnosti, ki jih ponujajo pobude, kot so Global Classroom, Iversity in tečaji MOOC, ter razpravljali o vlogi raziskav in izobraževanja v Evropi. Raziskovalna in izobraževalna omrežja danes uporabljamo za vse, od postavitve distribuirane arhitekture in deljenja izkušenj z drugimi do priprave modelov trajnostnega izobraževanja – to so velike zahteve in pričakovanja ključne skupnosti: šol in visokošolskih izobraževalnih ustanov.

Abstract: Research and Education Networks (NRENs and GEANT) are playing an increasing role in knowledge sharing, and their mandate and presence are definitely growing in the education landscape. This talk will explore the possibilities and opportunities offered by initiatives such as Global Classroom, Iversity and MOOCs, and discuss the role of R&E networking in Europe. From building distributed architecture to sharing experiences, to providing models for sustainable education, NRENs are called today to a meet the ambitious demands of a crucial community: schools and higher education.

Vdori v spletne strani

Web Page Intrusions

Tadej Hren • SI-CERT, Arnes

Povzetek: Odkar poznamo CMS-sisteme je upravljanje s spletnimi vsebinami precej enostavno in hitro opravilo. Po drugi strani pa so taki sistemi zaradi kompleksnosti lahko hitro tarča napadalcev, sploh če spletno mesto ni ustrezno vzdrževano. Posledice vdora so lahko precej različne, v vsakem primeru pa njihovo odpravljanje vzame precej dragocenega časa. V predavanju si bomo ogledali, na kakšne načine se napadalci lotijo spletnih mest, kakšne so posledice vdorov in seveda kaj moramo storiti, da do tega v prvi vrsti sploh ne bi prišlo.

Abstract: The use of CMS has made web content management quick and easy. On the other hand the complexity of such systems makes them a potential target for attackers, especially if a website is not correctly maintained. The consequences of an intrusion can vary widely but their mitigation always takes a significant amount of valuable time. In this lecture we will examine the methods attackers use to gain access to websites, the consequences of such intrusions and, of course, what needs be done to prevent them in the first place.



Iz (vaše) Joomla na Arnes Splet (WordPress): zakaj, kdo in kako

From (your) Joomla to ARNES Splet (WordPress): why, who and how

Miloš Gajić • Arnes

Povzetek: Arnes Splet (WordPress) je Arnesov odgovor na naraščajoče težave pri izdelavi ter predvsem potrebi po kompleksnem in kontinuiranem vzdrževanju spletnih strani pri nas gostujočih organizacij. Na predavanju bomo tako predstavili, kako lahko našim uporabnikom pomagamo do učinkovite spletne predstavitve s postavitvijo novih ali migracijo obstoječih strani na Arnes Splet.

Abstract: ARNES Splet (WordPress) is ARNES' answer to the increasing number of problems in developing web pages for the organizations that we host and, especially, the need for their complex and continuous maintenance. In this lecture we will demonstrate how we help our users achieve an effective web presence by developing new pages and migrating existing ones to the ARNES Splet service.

WordPress in Joomla – Neposredna primerjava

WordPress and Joomla – A Direct Comparison

Marko Lampret • Lampret.net

Povzetek: Glede na spletne raziskave sodita WordPress in Joomla med najbolj priljubljene odprtokodne sisteme CMS, zato se pred začetkom izdelave strani pogosto postavlja vprašanje, katerega izbrati. Pred leti je veljalo prepričanje, da je Joomla primernejša za izdelavo zahtevnejših spletnih strani, WordPress pa za preprostejše spletne strani in bloge. Temu ni več tako – WordPress je z nenehno rastjo deleža uporabnikov postal resna alternativa Joomla. V predavanju vam bomo s pomočjo praktičnih primerov predstavili ključne prednosti sistema WordPress, ki vas bo navdušil s preprostim upravljanjem in vzdrževanjem ter številnimi možnostmi za razširitev funkcionalnosti spletnih strani.

Abstract: Judging by web surveys, WordPress and Joomla are among the favourite open source CMS solutions, so before developing a web page one is often faced with the challenge of which of the two to use. In the past Joomla was often held to be the better choice for developing advanced web pages, and WordPress as a solution for simpler ones and blogs. This is no longer true and WordPress's growing market share has made it a serious alternative to Joomla. In this lecture we will use practical examples to demonstrate the key advantages of the WordPress system which boasts simple management and maintenance as well as numerous options for extending web pages' functionality.



Arnes pod pokrovom

ARNES – Under the Hood

Klemen Andreuzzi • Arnes

Povzetek: Pri zagotavljanju visoke razpoložljivosti IKT-storitev je treba poskrbeti za kar nekaj podrobnosti, ki končnemu uporabniku običajno niso vidne. Tako je treba vzpostaviti redundanco oziroma podvojiti vire tako na nivoju strojne opreme kot tudi storitev, treba je zagotoviti dva vira napajanja, pomembnejše strežnike gostiti na dveh fizično ločenih lokacijah itd. Na predavanju si bomo ogledali tipično postavitev opreme in podpornih storitev, ki je potrebna za nemoteno delovanje naših servisov.

Abstract: In order to provide high availability for ICT services it is necessary to take care of quite a few details that are usually invisible to the end user. One of these is redundancy i.e. having backup resources available at both hardware and service levels. An example of this is having dual power supplies, hosting more important servers in two physically discrete locations, etc. In this lecture we will look at the typical equipment and support service implementation required for the uninterrupted operation of our services.

Akcija in reakcija – Novi storitvi Arnes Razglas in Arnes Analitika

Action and Reaction – New ARNES Services: ARNES Razglas and ARNES Analitika

Jasmina Mešič • SI-CERT, Arnes

Povzetek: Predstavili bomo novi Arnesovi storitvi, ki vam bosta omogočili hitrejšo, učinkovitejšo in predvsem bolj merljivo komunikacijo z vašimi ciljnimi javnostmi. Storitve Arnes Razglas vam bo olajšala upravljanje z različnimi poštnimi seznammi, poenostavila administriranje kontaktov, ključna prednost pa je hitro in učinkovito obveščanje, saj z enim klikom vaša novica ali vabilo doseže množico natančno izbranih e-naslovov. Akcija! Učinek svoje komunikacije pa lahko izmerite z uporabo storitve Arnes Analitika, ki omogoča vpogled v podatke o obiskovalcih vašega spletnega mesta. Ugotovite, katere teme in novice berejo, od kod prihajajo, kje se izgubijo, in temu primerno oblikujte vsebino na strani. Reakcija!

Abstract: We will introduce ARNES' two new services which will enable faster, more efficient and, above all, more quantifiable communication with target audiences. The ARNES Razglas service will simplify the management of various mailing lists and contact administration. Its key advantage is rapid and efficient notification, since your news article or invitation can reach a number of precisely selected e-mail addresses with one click. Action! The effects of your communication can be measured with ARNES Analitika which provides insight into data about your website's visitors. See which topics and news stories they read, where they come from, how they get lost, and shape your web content accordingly. Reaction!



Zakaj uporabljam le še Arnes Mapo

Why I only ever use ARNES Mapa

Jure Kumer • Osnovna šola Poljane nad Škofjo Loko

Povzetek: Arnes Mapa je ena izmed Arnesovih preizkusnih oblračnih storitev, ki uporabniku omogoča hrambo in univerzalen dostop do datotek ne glede na lokacijo ali napravo, ki jo tisti trenutek uporablja. Z njo lahko datoteke samodejno sinhronizira med vsemi svojimi napravami, jih deli z izbranimi uporabniki, ali pa jih da na voljo brez omejitev. Nekateri izmed vas jo že poznate in tudi uporabljate, drugi morda potrebujete le ogled te predstavitve, da vas prepriča. Ne glede na to, kateri skupini uporabnikov pripadate, boste zagotovo navdušeni nad novimi funkcionalnostmi, ki vam ji bomo predstavili tokrat. Ta hip vam lahko razkrijemo le to, da bodo novosti še izboljšale in razširile možnosti sodelovanja med spletnimi in mobilnimi uporabniki. V drugem delu predstavitve bo sledil praktičen prikaz uporabe Arnes Mape kot učnega pripomočka v šoli.

Abstract: ARNES Mapa is one of ARNES' experimental cloud services that provides users with storage and universal access to files regardless of their location or the device they are currently using. The service provides automatic file synchronization between all the user's devices as well as file sharing with selected friends or, indeed, anyone. Some of you may already know about it and use it – for others this presentation might be all that is needed to get started. Regardless of which group you fall into, the new functions we will demonstrate on this occasion will no doubt pleasantly surprise you. We can already reveal that the updates will enhance and extend the possibilities for collaboration between web and mobile users. The second part of the presentation will demonstrate a practical use case illustrating how ARNES Mapa can be used as a learning tool in school.

Vaš oblak

Your Cloud

Jure Kranjc • Arnes

Povzetek: Arnesova storitev Strežnik po meri razširja možnosti prenosa storitev in infrastrukture v varen in zanesljiv oblak, ki gostuje na Arnesu. Gostovanje zmogljivih strežnikov, ki lahko poganjajo različne operacijske sisteme in zahtevne aplikacije, sedaj lahko prek enostavnega spletnega vmesnika upravljate sami. Seveda bomo skrb za vzdrževanje podporne infrastrukture prevzeli Arnesovi strokovnjaki. Dostop do oblaka še nikoli ni bil tako preprost.

Abstract: ARNES' custom server service extends the possibilities of migrating services and infrastructure to a safe and reliable cloud hosted by ARNES. You can now manage the hosting of powerful servers that can run various operating systems and advanced applications yourself using a simple web interface. Maintenance of the supporting infrastructure will of course be taken care of by ARNES' experts. Never before has cloud access been this easy.



Slovenska iniciativa za grid in njena pot k agilni infrastrukturi

Slovenian Initiative for a National Grid and its Path Toward an Agile Infrastructure

Barbara Krašovec • Arnes
Matevž Markovič • študent

Povzetek: Tehnologija grid se v znanosti in raziskovanju uporablja že več kot desetletje in predstavlja rešitev za marsikateri kompleksen računski problem ali eksperiment. V Sloveniji je bila prva gruča postavljena že leta 2004. Z ustanovitvijo Slovenske iniciative za nacionalni grid (SLING), katere ustanovni član je Arnes, smo računske centre organizacij in uporabnike začeli povezovati v nacionalno omrežje grid. Danes le-to sestoji že iz osmih gruč in obsega skoraj 10.000 jeder. Izzivov ne manjka. Različne potrebe raziskovalcev in projektov zahtevajo nenehno prilagajanje izvedbenega okolja, agilno postavitve centrov z različnimi računskimi viri. SLING zato razvoj usmerja v postavitve enotne agilne arhitekture, ki bo združevala vire oblaka, grida in gruče HPC. Na predavanju bomo predstavili cilje Slovenske iniciative v prihodnjih letih in nekaj primerov uporabe naše gruče v raziskovanju oziroma izobraževanju (FRI).

Abstract: Grid technology has been used in science and research for more than a decade and represents a solution to many complex computational problems or experiments. The first cluster in Slovenia was deployed in 2004. With the establishment of the Slovenian Initiative for a National Grid (SLING), of which ARNES is one of the founding members, we have started to connect organizations' computer centres and users into a national grid network. Today it consists of eight clusters encompassing nearly 10,000 cores. There is no lack of challenges. Differing researchers' and projects' needs demand constant adjustment of the implementation environment and agile establishment of centres with various computational resources. SLING has thus been directing development in the direction of a unified agile architecture which will combine cloud, grid and HPC cluster resources. In this lecture we will present the future goals of the Slovenian initiative and several examples of how our cluster has been used in research and education (FRI).



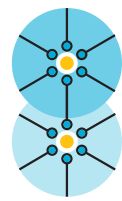
Konferenca Na poti k e-kompetentni šoli –
Učencu naproti
Zavod RS za šolstvo



Conference Towards E-competent School –
Child Led Learning
The National Education Institute
of the Republic of Slovenia

Konferenca

Na poti k e-kompetentni šoli



Letošnja tema konference **Na poti k e-kompetentni šoli** je **Učencu naproti**. Posvetili se bomo spremembam, ki jih prinaša sodobna tehnologija (predvsem tablice in ostale mobilne naprave) z uporabo e-vsebin, e-učbenikov, e-storitev in družabnih omrežij v učenju in poučevanju.

Pristope poučevanja in učne strategije z uporabo IKT bomo raziskali na treh področjih:

- e-listovnik, mobilno in spletno raziskovalno učenje in poučevanje;
- kombinirano, zvrnjeno (flipped) učenje in poučevanje ter izobraževanje na daljavo;
- učenje in poučevanje ena na ena, z mobilnimi napravami “prinesi sam” in s pomočjo spletnih izobraževalnih iger.

Spremembe na teh treh področjih bomo zasledovali skozi **šest tem**: učenje, poučevanje, vrednotenje, varnost, prostor in podpora.

Učenje

Področje Učenje je namenjeno učnim strategijam z IKT, njihovim značilnostim, prednostim in pomanjkljivostim glede na izkušnje iz šolske prakse. V ospredje bomo postavili učne strategije z IKT na treh razpisanih področjih. Zanima nas, kako učinkovito pri učenju razvijamo digitalno kompetenco (iskanje in izbiranje informacij, ugotavljanje verodostojnosti informacij, ustvarjanje in objavljanje, varnost na spletu in avtorske pravice, sodelovanje in komunikacija na daljavo) in v kolikšni meri se lahko računalniško razmišljanje (algoritmčno mišljenje) uveljavlja pri vseh predmetih.

Poučevanje

Poučevanje, ki je definirano kot poklicno ukvarjanje s podajanjem učne vsebine v šoli, se z uporabo e-vsebin, e-storitev, družabnih omrežij ... močno spreminja. Zanimale nas bodo spremembe v pristopih, načinih oziroma didaktiki poučevanja, podkrepljene z dokazi o njihovem vplivu oziroma učinku h kakovostnejšemu doseganju učnih ciljev, katere didaktične strategije glede na tri razpisana področja učinkovito vplivajo na razvoj digitalne pismenosti učencev in v kolikšni meri jih gradi in spodbuja šola.

Vrednotenje

Vrednotenje postaja vedno večji izziv v iskanju možnosti, kako z uporabo digitalnih naprav, e-vsebin in e-storitev izboljšati kakovost vrednotenja na višjih taksonomskih ravneh glede na tri razpisana področja. Osredotočili se bomo na to, kako pripraviti dejavnosti in naloge, kako jih vključevati v proces pouka, kako vrednotiti zmožnosti sodelovalnega reševanja problemov in kako pri tem vključiti samovrednotenje oziroma samoregulacijo.

Varnost

Ob povečani rabi mobilnih naprav in spleta tako pri pouku kot pri samostojnem učenju se sprašujemo o e-varnosti glede na tri razpisana področja. Vsak učenec pri pouku in samostojnem učenju razpolaga s svojo mobilno napravo in vstopa v splet, kar prinaša veliko dodano vrednost. Zato je nastopil trenutek, ko je treba naš odnos do e-varnosti spremeniti – ne toliko govoriti o (ne)varnosti, ampak bolj začeti oblikovati digitalno državljanstvo. Zanimajo nas različne rešitve, zamisli oziroma pristopi, ki nam bodo pri tem v oporo.

Prostor

Prostor učenja in poučevanja je fizični in/ali virtualni. V fizičnem prostoru je pomembna sprememba pri ureditvi učilnice in naprav v njej oziroma zunaj nje. To pomeni spremenjeno organizacijo dela in pouka (npr. urnik). Kako je ob tem pomembna ustrezna izbira virtualnega prostora: spletne učilnice, družabna omrežja (npr. Facebook, Twitter itd.) in aktivne spletne strani glede na tri razpisana področja? Kako uporaba drugačnega prostora vpliva na učinkovitost, dvig motivacije in kako se soočamo s paralelnimi virtualnimi prostori? Kakšni so čari in pasti virtualnih prostorov? Zakaj uporabljati različne prostore? Problem sožitja med različnimi virtualnimi prostori?

Podpora

Kaj pomeni podpora in katere oblike podpore so najbolj učinkovite in zaželeni (sistemske, tj. s strani države, ali nesistemske, tj. na šoli, med učitelji ipd.) na treh razpisanih področjih. Katere vrste podpore so najbolj zaželeni in na kakšen način nudite in izvajate podporo (tehnična, didaktična podpora učiteljem, podpora učencem ...). Kako razvijajo digitalne kompetence učitelji oziroma vzgojitelji? Na kakšen način vodstvo šol spodbuja razvoj digitalnih kompetenc?

Conference

The Way towards E-competent School

This year's theme of the **Towards E-competent School** conference is **Child Led Learning**. We will be dedicating our attention to the changes introduced into teaching and learning by modern technology (mainly tablets and other mobile devices), such as the use of e-contents, e-textbooks, e-services and social networks.

We will explore approaches to teaching and learning strategies employing ICT in three areas:

- e-portfolio, mobile and webquest-based teaching and learning;
- blended learning, flipped classroom and distance education;
- one-to-one pedagogy, "Bring Your Own Device (BYOD)" mobile learning and web-based educational games.

We will pursue changes in these three areas through **six topics**: learning, teaching, assessment, safety, space, and support.

Learning

The sphere of Learning is dedicated to learning strategies using ICT, their characteristics, advantages and disadvantages in relation to the experiences from school practice. The focus will be put on learning strategies using ICT in the three specified areas. We want to know how effectively it is possible to develop digital competencies (searching and selection of information, determining the credibility of information, creation and publishing, on-line safety and copyrights, collaboration and communication) and to what extent computer thinking (algorithmic thinking) can be carried into effect in all subjects.

Teaching

Teaching, which is defined as the professional presentation of learning contents in school, is changing drastically with the use of e-contents, e-services, social networking ... Describe the changes in approaches, methods or didactics of teaching and corroborate with evidence their influence and effect towards a higher quality achievement of learning goals. We would like to know which didactic strategies in regards to the three specified areas influence the development of students' digital literacy and to what extent they are built up and encouraged by school.



Assessment

Assessment is becoming an ever growing challenge in finding ways of using digital devices, e-contents, and e-services to improve the quality of assessment at higher taxonomic levels in regard to the three specified areas. We will focus on how to prepare activities and tasks; how to include them in the teaching process; how to evaluate the ability of collaborative problem solving and how to integrate self-assessment or self-regulation into it.

Safety

As we have witnessed increased use of mobile devices and the web during instructions as well as during independent learning, we are asking ourselves about e-safety in regard to the three specified areas. Each student during lessons and self-directed learning has his/her own mobile device at his/her disposal and logs on to the web, which brings a lot of added value. This is why now is the proper moment to change our attitude towards e-security – to not be preoccupied with (in)security but instead begin developing digital citizenship. We are interested in a variety of solutions, ideas and approaches which will be of help in this task.

Space

The space of learning and teaching is physical and/or virtual. In physical space a change is necessary in the organization of the classroom and devices inside and outside it. This means an altered organization of work and instructions (e.g. schedule). Considering this, how important is the appropriate choice of virtual space: virtual classroom, social networks (e.g. Facebook, Twitter, etc.) and active websites in regards to the three specified areas? How does the use of a different space affect efficiency, increasing motivation and how do we cope with parallel virtual spaces? What are the attractions and pitfalls of virtual spaces? Why use different spaces? The problem of coexistence between different virtual spaces?

Support

What does support mean and which forms of support are most effective and desirable (systemic, i.e. demanded from the state, or non-systemic, i.e. at school, between teachers, etc.) in the three specified areas. What kinds of support are most desirable and how do you offer and carry out support (technical, didactic support for teachers, supporting pupils, etc.). How do teachers or educators develop digital competencies? In what way does school leadership encourage the development of digital competencies?

1.

Plenarna predavanja • Plenary Lectures

Zakaj se raje učim iz digitalnega učbenika

Why I prefer to use e-textbook

Daša Bejat Krajnc • Osnovna šola Dušana Flisa Hoče, 5. razred

Povzetek: Učenje matematike zahteva redno učenje in ponavljanje. Včasih se zgodi, da določeno snov pozabim. Če se "pozabljeni" snov nahaja v letošnjem učbeniku, potem jo lahko hitro ponovim. Večja težava se pojavi, če želene snovi ni v učbeniku. Takrat si pomagam z e-učbeniki, ki so uporabni tudi v drugih primerih.

Zamislila sem si tri primere, v katerih sem primerjala uporabo papirnega učbenika in e-učbenika:

- 1) želim nadoknaditi zamujeno snov zaradi manjkanja pri pouku;
- 2) ponavljam in utrjujem snov, ki smo jo predelali v šoli,
- 3) novo snov se želim naučiti, preden nam jo bo razložila učiteljica.

V prispevku bom predstavila način, kako sem primerjala oba učbenika za peti razred osnovne šole. Ugotavljam, da se lahko matematiko učim iz obeh učbenikov, ima pa uporaba e-učbenika nekaj prednosti. Veliko raje se učim z računalnikom: pri reševanju nalog takoj dobim rešitev, naloge so zanimive. Slabost je ta, da računalnika za učenje nimamo v šoli pri pouku matematike.

Abstract: Learning mathematics requires regular learning and revising. It sometimes happens that I forget mathematical rule or explanation. If the "forgotten" content can be found in this year's pupil's book, then I can easily refresh it. More serious problem occurs if an explanation you need is not in the pupil's book. Then you can help yourself with e-textbooks that are useful in other situations as well.

I decided to compare the use of a paper book with an e-textbook in three different situations:

- 1) I want to catch up with knowledge I missed due to my absence from school,
- 2) I want to revise and consolidate the content which we learned in school,
- 3) I would like to learn before the teacher explains the matter in school.

In this article I will discuss the way I compared e-textbook with a paper book for 5th grade of primary school. I found out that you can learn from both maths books, but the use of e-textbook has some advantages. I prefer using a computer for learning, as soon as you finish the exercise you can check it, the tasks are interesting. The only disadvantage is that we do not use a computer to learn mathematics in school.



Kako mi je računalnik pomagal narediti raziskovalno nalogo

How the computer assisted me in my research work

Lenart Bučar • Osnovna šola Louisa Adamiča Grosuplje, 7. razred

Povzetek: Naredil sem raziskovalno nalogo s področja kemije. V njej sem meril časovni potek temperature pri reakcijah reaktivnih kovin z vodo. Ker je merjenje temperature z živosrebrnim termometrom nenatančno in počasno, sem uporabil elektronske temperaturne senzorje. Priklopil sem jih na mikroprocesor Arduino, ki sem ga sprogramiral tako, da je podatke o temperaturi poslal na osebni računalnik, ta pa jih je zapisal v datoteko. Shranjene podatke sem obdelal v Excelu in narisal grafe, iz katerih sem ugotovil hitrost reakcije in temperaturno razliko vode pred in po reakciji. Na podlagi tega sem kovine razvrstil po njihovih lastnostih. Prišel sem do zaključka, da mi je računalnik zelo olajšal branje, zapisovanje in urejanje podatkov, predvidevam pa tudi, da mi bo prav prišel tudi v prihodnosti.

Abstract: I did a research paper in the field of chemistry. I measured the time course of the temperature in reactions of reactive metals with water. As the temperature measurement with mercury thermometer is inaccurate and slow, I used the electronic temperature sensors. I have connected to the Arduino microprocessor, which I have programmed so that the temperature data were sent to a personal computer, and then stored in the file. I processed the data stored in Excel and drew graphs, from which I found the reaction rate and temperature difference of water before and after the reaction. On this basis, I classified metals according to their properties. I came to the conclusion that my computer has greatly eased reading, writing, and editing data, and I assume that it will come in handy in the future as well.

Prihodnost učenja

The Future of Learning

Scott Neuman • IBM CEE

Povzetek: Tehnologije družabnega poslovanja, ki pomagajo ljudem, da se med seboj povežejo, komunicirajo in si izmenjujejo informacije, igrajo ključno vlogo tudi pri preoblikovanju osnovnih in srednjih šol ter institucij, ki delujejo na tem področju. Nove generacije učencev vsak dan uporabljajo spletna družbena orodja za komunikacijo, medsebojno sodelovanje in povezovanje z vrstniki ter družinskimi člani. Enako funkcionalnost pričakujejo tudi v učnem okolju na osnovnih in srednjih šolah ter univerzah, ki jih obiskujejo. Hkrati si tudi delodajalci želijo diplomantov, ki bodo znali uporabljati tehnologijo in sodelovati z drugimi, saj so te veščine nujen pogoj za uspeh v družabnem poslovanju. Če želijo pripraviti učence in študente za prihodnje delo, morajo izobraževalne ustanove ustvariti okolje, ki podpira družbeno kulturo recipročnosti in izmenjave informacij ter dostop do poslovnih orodij, ki jih bodo ti uporabljali skupaj z družbenimi mediji in pri medsebojnem sodelovanju. Z uvedbo tovrstnega, kolaboracijskega pristopa lahko izobraževalne ustanove nadgradijo učenje in raziskovanje, izboljšajo administrativne postopke in okrepijo vezi med univerzitetno sfero in gospodarstvom.

Abstract: Social business technologies help people connect, communicate and share information, and is playing a critical role in transforming K-12 schools and higher education institutions. New generations of students use Internet social tools every day to communicate, collaborate and network with peers and family. They expect the same functionality within the learning environments of their schools, colleges and universities. At the same time, employers want graduates with the technology and collaboration skills necessary to succeed in a social business. So to prepare students for the future, educational institutions need to provide an environment that supports a social culture of reciprocity and sharing, along with access to the business tools that their graduates will be using for social media and collaboration. By implementing this collaborative approach, educational institutions can enhance teaching and research, improve administrative operations, and strengthen linkages between academia and business.



Don Kihot v visokošolskem izobraževanju?

Ali: kako izboriti boj z institucionalnimi mlini na veter in podpreti na učečega osredotočen e-listovnik?

Don Quixote in tertiary education?

Or: how to win a fight against institutional windmills and support student-centred e-portfolios?

Thomas Strasser • Vienna University of Teacher Education

Povzetek: V predstavitvi se bomo seznanili z raziskovalnim projektom uporabe e-listovnika v Mahari na Pedagoški fakulteti Univerze na Dunaju. Poudarjene bodo raznolike didaktične možnosti v Mahari in priložnosti za na učečega osredotočeno učenje ter lastno organizacijo učenja. Predstavljen bo tudi odziv študentov in profesorjev, ki so uporabili e-listovnik na tak način, predvsem z vidika prevzemanja lastne odgovornosti za strategije reševanja problemov med študijskim procesom (predstavitev primerov dobre prakse).

Ob raziskovalnih premislekih se predstavitev osredotoča na uporabne scenarije (npr. Kako so lahko učenci v Mahari tudi učitelji? Kako se prepustiti izzivom spremenjene vloge učitelja in učenca – zamenjava vlog? Kakšna je refleksija v Mahari? Kako lahko Mahara podpre prevzemanje vloge učenca kot odločevalca o lastnem učenju?) Še več, skupaj bomo razmišljali o strateških in pedagoških korakih, ki so potrebni za uvajanje na učečega osredotočene e-listovnike, ki spodbujajo sodelovalno učenje, in načinih, kako spodbuditi učitelje in učence k takemu načinu učenja in poučevanja.

Abstract: This talk is based on a research project focussing on the use of e-portfolio software Mahara with student teachers at Vienna University of Teacher Education. The presentation will emphasise the didactic versatility of Mahara, its potential to support student-centred, self-organised learning and discuss its general reception among students and professors mainly within the context of self-responsible problem-solving strategies at school practical studies (presentation of good practice examples).

Next to scientific considerations, practical applicative scenarios will be presented (e.g. how can students be teachers with Mahara? What about a certain change of paradigm in the context of roles, teacher/student=>facilitator? How does reflection take place in Mahara? How can Mahara support child-led learning?). Furthermore, the talk presents several strategic and pedagogical steps in order to implement a student-centred, collaborative e-portfolio software at university and to convince sceptical staff and students.

Sinergija e-projektov

Synergy of e-Projects

Gregor Mohorčič, Andreja Čuk, Andreja Bačnik,
Anita Poberžnik, Tanja Rupnik Vec • Zavod RS za šolstvo
Tomi Dolenc • Arnes

Povzetek: Pot do e-kompetentne šole je sestavljanka iz mnogoterih delcev, nobenega v celotni sliki ni moč pogrešati. V prispevku želimo osvetliti nekatere od teh delcev – projektov, povedati, kako se jih vsi skupaj skozi različna prizadevanja lotevamo in kako jih sestavljamo v celoto. Pri tem gradimo na dediščini, pridobitvah cele vrste že izpeljanih projektov, npr. e-šolstvo itd.

Zdaj gre zares. V e-šolo bomo hodili z e-šolskimi torbami, da bi se e-učili. Čas je, da preizkusimo svoja brezžična omrežja, preštejemo e-orožja, si pridobimo znanje in zagotovimo podporo, da nam pri pouku tehnologija ne bo ovira, temveč pomoč. Varnost ob tem postaja pomembnejša kot kdajkoli prej.

V prispevku bomo predstavili izbrane vidike projektov E-učbeniki, E-šolska torba s pilotnim projektom, Inovativna pedagogika ena na ena v luči kompetenc 21. stoletja – izvedbeni kurikulum, Ustvarjalni razred (CCL), EUfolio, obenem pa poudarili pomen ustrezne e-infrastrukture in varne rabe tehnologije.

V projektu **E-učbeniki s poudarkom na naravoslovnih vsebinah** nastajajo e- oziroma i-učbeniki za naravoslovne predmete in matematiko po celotni vertikali. Dodana vrednost e-učbenikov je predvsem v vsebinah, ki so nadgrajene z dinamičnimi interaktivnimi konstrukcijami, simulacijami, avdiovizualnimi elementi itd. S portalom za objavo e-učbenikov učencem, učiteljem, staršem in ostalim zainteresiranim zagotavljamo brezplačen dostop do potrjenih e-učbenikov na vseh operacijskih sistemih ter na mobilnih in stacionarnih napravah. S tem smo vzpostavili temelje za nadaljnji razvoj e-učbenikov v slovenskem prostoru.

V projektu **E-šolska torba** nadaljujemo z vzpostavljanjem infrastrukture za razvoj e-učbenikov pri družboslovnih predmetih in jezikih v osmem in devetem razredu osnovne šole ter v prvem letniku gimnazije, ter e-storitev, ki jih razvija konzorcijski partner projekta Arnes. V pilotnem projektu Uvajanje in uporaba e-vsebin in e-storitev v projektih E-šolska torba in E-učbeniki razvite didaktične pristope preizkušamo na šolah, vključenih v pilotno mrežo. V nadaljevanju bo uporaba le-teh omogočena vsem šolam v slovenskem šolskem prostoru.

Izvedbeni kurikulum v projektu **Inovativna pedagogika ena na ena v luči kompetenc 21. stoletja** temelji na analizi obstoječih učnih načrtov z vidika vključevanja IKT, digitalne in ostalih ključnih kompetenc. Za vse predmete smo pripravili Smernice za uporabo IKT (e-vsebin in e-storitev), ki so živ dokument, se sproti dopolnjujejo in posodabljaajo. Njihov bistven sestavni del so dodatni didaktični napotki za uporabo IKT pri predmetu s pregledom izbranih (možnih)



dejavnosti učencev z osmišljeno uporabo IKT, ilustrativni, preizkušeni primeri in seznam obstoječih e-vsebin in e-storitev za posamezen predmet.

V smeri cilja – priprave izvedbenih kurikulumov za predmete, iščemo in razvijamo inovativne pristope učenja in poučevanja z IKT, individualizacijo oziroma personalizacijo, formativno spremljanje (e-listovnik) itd. Poudarek je na preišljenih, funkcionalnih, inovativnih IKT dejavnostih učencev/dijakov za večjo kakovost znanja.

V **Creative Classroom Lab (CCL) – Ustvarjalnem razredu** razvijamo, preizkušamo in evalviramo inovativne učne scenarije za uporabo sodobne tehnologije v pedagogiki ena na ena. Glavni namen je razviti dejavnosti za pouk, ki omogočajo individualizacijo, sodelovanje, interaktivnost, inovativnost uporabe IKT, časovno in krajevno odprtost učenja itd. V prvem obdobju razvijamo učne scenarije za projektno sodelovalno delo, obrnjeno (flipped) učenje, individualizacijo in ustvarjanje vsebin. V Sloveniji razvijamo učne scenarije za projektno sodelovalno delo. Posebno pozornost namenjamo sistematični refleksiji učencev in učiteljev o izvedenih dejavnostih, usmerili se bomo tudi v razvijanje vrednotenja projektno-sodelovalnega dela. Rezultat projekta bodo javno objavljeni učni scenariji, ki jih bodo lahko učitelji različnih predmetov in držav preizkusili pri svojem pouku in hkrati podali povratno informacijo, komentarje in svoje predloge za doseganje ciljev učnega procesa.

V okviru projekta **European ePortfolio Classrooms (EUfolio)** spodbujamo uvajanje formativnega spremljanja učenčevega znanja in veščin s pomočjo elektronskega listovnika (Mahara, www.listovnik.sio.si). Temeljno raziskovalno vprašanje sodelujočih učiteljev je: “Kako naj s pomočjo e-listovnika spodbujam učence k načrtovanju, spremljanju in vrednotenju napredka na različnih dimenzijah učenja, npr. kritičnega mišljenja, sodelovanja in komuniciranja, dela z viri in ustvarjalnosti ter poznavanja in razumevanja učnih vsebin?” E-listovnik uporabljamo v dveh funkcijah, kot orodje za samournavanje učenja ter kot okolje za sodelovalno učenje. V prvem letu projekta je nastala bogata zbirka sprotnih priprav na pouk (learning designs) in uporabnih učnih gradiv (učni listi, orodja za formativno spremljanje itd), ki so objavljene na spletni strani pilotnega projekta (eufolio.si). V prihodnjem letu se bomo usmerili na uporabo Mahare kot učnega okolja za sodelovalno učenje, pripravili bomo primere spletnih strani (v Mahari) s konkretnimi navodili za učenčevo samostojno raziskovanje in učenje.

Vse, kar sestavlja naše življenje in delo, postopoma dobiva predpono “e-”. Pritisk e-lektrifikacije je velik, domače in evropske politične agende (Opening Up Education) nas hkrati opominjajo na kljub vloženemu trudu neizpolnjene želje in hkrati obetajo novega goriva. Ali je pot že cilj? Kateri delčki sestavljanke še morajo biti na pravih mestih, da slika “stoji”?

Abstract: The path to the e-competent school is a jigsaw puzzle consisting of an array of particles, none of which can be left out in the whole image. In this paper we want to shed light on some of these particles – projects to tell you how they all work together through different efforts and how they are assembled into a whole. In doing so, we build on the heritage of a whole series of projects already undertaken, for example the E-education project etc.

Now it's for real. We will attend the e-school with the e-schoolbag to e-learn. It's time to try out their wireless networks, numerous e- tools, gain knowledge and provide support for us, so that the class technology will not hinder us but rather help. Safety is becoming more important than ever.

In this paper we present selected aspects of E-student books, E-schoolbag pilot project, Innovative Pedagogy One-to-one in the light of 21st century competencies – implementing the curriculum, Creative Class (CCL), EUfolio, while also emphasizing the importance of appropriate e-infrastructure and safe use of technology.

In the **E-student books project with an emphasis on science content** i-student books for science subjects and mathematics across the vertical are being designed. The added value of e-student books is mostly in topics that are upgraded with dynamic interactive structures, simulations, audio-visual elements. The portal for publishing e- books to pupils, teachers, parents and other interested parties provides free access to certified e-student books on all operating systems, mobile and stationary devices. With this we have established a foundation for further development of e-student books in the Slovenian territory.

The **E-schoolbag** project proceeds with the establishment of an infrastructure for the development of e-student books in social science subjects and languages in the eighth and ninth grade of primary school and the first year of high school, and e-services developed by a consortium partner of the project, ARNES. The pilot project Implementation and use of e-content and e-services projects in e-schoolbag and e-student books developed didactic approaches tested in the schools involved in the pilot. In the future, their use will be enabled all schools in Slovenia.

Implementing the curriculum in the project **Innovative Pedagogy One-to-one in the light of 21st century competencies** is based on the analysis of existing curricula in terms of the integration of ICT, digital and other core competencies. For all the subjects we have prepared guidelines for the use of ICT (e-content and e-services), which are a live document to be updated and modernized. They are an essential part of the additional teaching guidelines for the use of ICT in subjects to review and select (possible) activities that give meaning to use of ICT, illustrative examples and tested list of existing e-content and e-services for each item.

In view of the goal – preparing lesson plans for subjects, we are looking for and develop innovative approaches to teaching and learning with ICT, individualization and personalization, formative assessment (e-portfolio), etc. The emphasis is on sound, functional, innovative ICT activities of pupils / students to improve the quality of knowledge.



In the **Creative Classroom Lab (CCL)** project we develop, test and evaluate innovative learning scenarios for the use of modern technology in pedagogy one-to-one. The main purpose is to develop activities for classes that allow individualization, collaboration, interactivity, innovative use of ICT, open time and place of learning, etc. In the first phase we developed learning scenarios for collaborative project work, flipped learning, and individualisation of content creation. In Slovenia, we develop learning scenarios for collaborative project work. Particular attention is paid to the systematic reflection of pupils and teachers about the activity performed, and we will focus on developing assessment of collaborative work. The result of the project will be learning scenarios that will be made available for teachers of different subjects and countries, they will test them in classes and at the same time give feedback, comments and proposals for achieving the objectives of the learning process.

Within the framework of the **European ePortfolio Classrooms (EUfolio)** we encourage the implementation of formative assessment of students' knowledge and skills through e-portfolio (Mahara, www.listovnik.sio.si). The main research question of participating teachers is: "How to encourage students to plan, monitor and evaluate the progress in various dimensions of learning by using the e-portfolio, for example critical thinking, collaboration and communication, working with resources and creativity as well as knowledge and understanding of the learning content?" E-portfolios are used as a tool for self-regulation of learning and as an environment for collaborative learning. In the first year of the project we have created a rich collection of homework assignments for classes (learning designs) and useful learning materials (worksheets, tools for formative assessment, etc.), which are available on the pilot project website (eufolio.si). In the coming year we will focus on the use of Mahara as a learning environment for collaborative learning. We have prepared examples of websites (in Mahara) with specific instructions for pupils' independent research and learning.

Everything that constitutes our lives and work is gradually gaining the prefix "e-". The pressure of e-lectrification is large, home and European political agenda (Opening Up Education) at the same time reminds us of unfulfilled desires despite our efforts and at the same time promising new fuel. Is the goal also the way? Which pieces of the puzzle have to be in the right places that the picture "stands"?

Microsoft v izobraževanju

Microsoft in Education

Dejan Cvetković • Microsoft Slovenia

Povzetek: Slovenija je v letih po osamosvojitvi prehodila resnično zavidanja vredno pot gospodarskega in družbenega razvoja, a danes smo spet pred velikimi izzivi. Ob aktualnem spopadanju s posledicami svetovne gospodarske krize pa moramo poiskati nove poti za uspeh v svetu, ki ga zaznamujejo vse bolj neizprosna svetovna konkurenca, hiter napredek držav v razvoju, nevarnost klimatskih sprememb ter še vedno nerazrešene dileme okolju bolj prijazne in resnično trajnostne rasti. Trdnega prepričanja smo, da bo ravno tehnologija ključna pri preoblikovanju trajnega razvoja. Resnično trajen razvoj lahko države zagotovijo le, če na svetovnem trgu vedno znova ponudijo nove izdelke, proizvedene z najbolj naprednimi metodami. Na tej razvojni stopnji je ključ do mednarodne konkurenčnosti v inovativnosti – te pa ni brez vrhunsko usposobljenih in izobraženih državljanov. Predavanje se bo osredotočilo na pregled iniciativ in aktivnosti v izobraževanju. Pogledali si bomo primere praks iz tujine.

Abstract: Slovenia has done a lot since the Independence Day in economic and social growth. However, we are facing new challenges these days. The great global economic crisis demands looking for new solutions to gain success in ever growing competition in the world, fast growing developing countries, climate changes and unresolved dilemmas in sustainable ecology-friendly development. We firmly believe that the technology will have an immense impact in reshaping the sustainable development, which is possible only if countries can offer new products on the world market, and if products are designed by advanced methods. The key to it all is innovation on all levels, which is achieved solely by highly skilled and educated citizens. The presentation will focus on the review initiatives and activities in education. We will also see examples of good practices from all around the world.



Prihodnost je tukaj

The Future is Now

Arijana Blažić • eTwinning ambasadorica, HR

Povzetek: Udeleženci delavnice bodo spoznali paleto uporabniku prijaznih orodij 2.0, ki jih lahko preizkusijo z učenci in dijaki (v virtualnih okoljih ali v razredu). Delavnica se bo osredotočila na načine, kako motivirati in angažirati učence/dijake, da postanejo aktivni učeči se 21. stoletja.

Abstract: In this hands-on workshop participants will be introduced to an array of user-friendly web 2.0 tools which can be used to enhance collaboration among students in on-line and offline environments. The workshop will focus on ways to engage and motivate students to become 21st century learners.

Vrednotenje kot način učenja v digitalni dobi

Assessment as Learning in the Digital Age

Mary Webb • King's College London

Povzetek: Nove tehnologije lahko podpirajo tako formativno (vrednotenje za učenje) kot sumativno vrednotenje (preverjanje znanja) in tako povečujejo pestrost možnosti za ocenjevanje. Danes lahko učence ocenjujemo s pomočjo simulacij, e-listovnikov ali interaktivnih iger. Formativno vrednotenje lahko omogočite s sistemom spletnega vrstniškega ocenjevanja oziroma s prilagojenimi povratnimi informacijami, pridobljenimi s pomočjo računalnika, samovrednotenja in različnih drugih pristopov, ki združujejo učitelje in vrstnike, ter samodejnih povratnih informacij. Vidiki vrednotenja, ki so bili kot ključni za prihodnji razvoj opredeljeni na mednarodnih vrhovnih srečanjih (EDUsummit 2011 in 2013; <http://www.edusummit.nl/>), na katerih so se zbrali odločevalci, praktiki in raziskovalci, so: vključevanje študentov v vrednotenje, digitalno izboljšana ocena in ocena, ki vključuje sodelovalno učenje. Še posebej pomemben za učenje 21. stoletja je bil opredeljen pomen vrednotenja kot konteksta učečega. Tako vrednotenje je še posebej vidno v virtualnem vrednotenju uspešnosti in v tehnološko podprtih okoljih, kjer je izkušnja vrednotenja hkrati lahko tudi zavzeto učenje.

Izhajajoč iz lastne izkušnje pri delu z učenci in učitelji v zadnjih letih bom predstavila, kako se vrednotenje lahko izkaže kot podpora učenju in učencem, ter različne vloge, ki jih lahko imajo nove tehnologije. Naše delo je pokazalo, da predstavlja razvijanje učiteljeve in učenčeve uporabe vrednotenja velik izziv, vendar lahko privede do boljših učnih dosežkov in samoregulacije učenja.

Abstract: New technologies can support both formative assessment (assessment for learning) and summative assessment (assessment of learning) and are increasing the range of possibilities for assessments. Today, students can be assessed through simulations, e-portfolios, or interactive games. Formative assessment can be enabled by on-line peer assessment systems, adaptive feedback from computers, self-assessment, and assessment approaches that combine teacher, peer, and automatic feedback. Aspects of assessment identified as critical for future developments at International Summit Meetings (EDUsummit 2011 and 2013 <http://www.edusummit.nl/>), which brought together policymakers, practitioners and researchers, were: student involvement in assessment, digitally-enhanced assessment and assessment involving collaborative learning. The importance of assessment as a learning context was identified as particularly important for 21st century learning. Such assessment is evident in both virtual performance assessment



and in technology-supported classroom environments where the experience of the assessment can be a learning engagement.

Drawing on our work with students and teachers over recent years I will examine how assessments can be designed to support learning and learners and the roles that new technologies can play. Our work has shown that developing teachers' and students' use of assessment to support learning is challenging but can lead to improved learning gains and self-regulation of learning.

Pustite otroke pri miru!

Leave them kids alone!

Helle Kirstine Petersen • Hellerup School

Povzetek: Učitelji želimo našim učencem posredovati veliko stvari. Pri tem seveda pozabljamo, da je veliko našega znanja že zastarelega in da bo še bolj zastarelo, ko bodo otroci zapustili šolo. V razredu moramo nehati toliko govoriti.

Da bodo lahko dohajali spremembe, se bodo morali današnji in prihodnji učenci učiti vse življenje. Največ, kar jim lahko damo, so pripomočki za boljše učenje in motivacijo za to. Učimo jih, kako naj se učijo, ne pa vsebine in dejstva.

Ko postanejo učenci ustvarjalci na vseh področjih, postane vrstniško učenje naravni del njihovega stila učenja, IKT pa se, ob ravnilu in kompasu, spremeni v sestavni del puščice. Ne naučijo se samo uporabljati IKT, ampak tudi izbrati najustreznejše orodje ali program za različne probleme, predstavitve, zbiranje informacij itd.

Ko učenci upravljajo in so soodgovorni za svoje učenje, se ne naučijo samo veščin, ki jih potrebujejo, da uspešno naredijo zaključni izpit. Bolj pomembno je, da razvijejo tudi niz socialnih veščin in zmožnosti sodelovanja, organizacije časa, samodiscipline, couchinga, procesiranja itd.

Abstract: We teachers have so much we want to pass on to our students. And we tend to forget that much of our knowledge is already outdated and even more will be by the time these children leave school. We need to stop talking so much in class.

The children we teach today and in the future will have to be lifelong learners to keep up with the development. So the best things we can give them are the tools to learn and the motivation to do so. Let's teach them how to learn instead of teaching them facts.

When the children become producers in all subjects, peer to peer teaching becomes a natural part of their learning pattern and ICT becomes part of every student's toolbox next to the ruler and compass. They learn not only to use ICT but to choose the right type of hard- and software for the different types of problems, presentations, information retrieval, etc.

When the children are in control of and co-responsible for their own learning, they learn not only the skills needed to pass the national tests. More importantly they develop a whole string of social skills in cooperation, time management, self-discipline, coaching, processing, etc.



2.

Vabljena predavanja • Invited Lectures

Tek za učečimi – Poučevanje na razprodaji na Facebooku

Running after the students – Teaching on sale on Facebook

Jens Haugan • Hedmark University College, Department of Humanities

Povzetek: Poučevanje na univerzi ni vedno preveč zabavno zaradi preprostega dejstva, da obiskovanje predavanj ni obvezno. Vedno več študentov pograbi možnost študija ob delu, kar za samo izobraževanje ni slabo. Toda posledica tega je, da kljub velikemu vpisu oziroma izbiri določenih predmetov, predavalnice ostajajo skoraj prazne, kar pomeni velik izziv z vidika poučevanja in učenja. Drug vidik takega stanja pa je dejstvo, da študenti, ki ne opravijo izpita, samo povečujejo stroške in ne dodatnega zaslužka za izobraževalno ustanovo. Če parafraziram Adama Smitha: Ni ga boljšega kot brezplačno izobraževanje. Ena od strategij je, da se srečamo s študenti tam, kjer so: na spletnih družabnih omrežjih. Toda, kakšne e-kompetence potrebujejo oboji, učitelji in študenti? Kakšne so potrebe inovativnega izobraževanja? Pojavlja se vprašanje, ali mora učitelj prodati svojo dušo Facebooku, da bi svojim študentom pomagal opraviti izpit. In ali s tem že ne vidimo obrise učitelja, ki dela 24 ur sedem dni v tednu? O takem scenariju sem razpravljal z norveškimi študenti, ki študirajo norveško slovnico in zgodovino jezika, vendar bi morala tema predvsem zanimati udeležene v e-učenju/e-poučevanje.

Abstract: Teaching in higher education isn't always that "fun" because of the simple fact that in many cases attending classes isn't mandatory. More and more students grasp this opportunity to study certain subjects while working full time – which is good for higher education in general. But the result might be that despite of full-signed classes the classrooms may be rather empty which may make teaching – and learning – quite a challenge. Another aspect of this scenario is the fact that students who fail their exams only generate expenses and no income for the teaching institution. To rephrase Adam Smith: There is no such thing as a free education.

One strategy, then, is trying to meet the students where they actually are: on-line on social platforms. But what kind of e-competence is needed on either side; the teachers' and the students'? What are the needs and demands of innovative education? Another question arises in this context: does the teacher have to "sell his soul" on Facebook in order to help the students pass their exams? And are we seeing the contours of a 24/7 teacher ahead?

The scenario is discussed with Norwegian students studying Norwegian grammar and language history as a case, but the topic should be of general interest within the e-teaching/e-learning field.



New-age raziskovanje in individualizirano učenje za ves Facebook

A New Age of Exploration and Individualized Learning for All Facebook

Boris Berenfeld, Tatiana Krupa • GlobalLab International, London, UK.

Povzetek: Kljub splošnemu prepričanju, da predstavlja individualizirano učenje mentorstvo ena na ena oziroma prilagajanje vsebin in učnega načrta posameznikom, nam Global Student Laboratory dokazuje, da je učenje lahko zelo individualizirano, ko učenci sodelujejo v globalno razpršenih skupinah. Prispevek raziskuje, kako spletna platforma Global Lab omogoča na učence osredotočene projekte, v katerih je vsak učenec raziskovalec. S sodelovanjem v projektih, ki so naravnani na obravnavane teme, učenci pridobivajo vsebinsko in procesno znanje in zmožnosti. Ko enkrat obvladajo reševanje problemov, jim omogočimo, da razvijajo svoje projekte v podprtem okolju. Uporabijo lahko vse svoje zmožnosti, vključno z uporabo vzorčenja in zbiranja kvalitativnih ter kvantitativnih podatkov. Platforma podpira vzorčenje in aplikacije za pametne telephone tako, da omogoča pretok podatkov neposredno v podatkovno bazo Global Lab. Tam se vsi podatki prikazujejo na zemljevidu sveta, odvisno od tega, kje so bili zbrani, tako da lahko učenci izrišejo grafe, vizualizirajo in analizirajo informacijo. Zanimivo je, da lahko uporabijo enak postopek in način zbiranja podatkov, rezultati pa so različni. Kljub enakosti, ki je vgrajena v sistem, se podatki neizogibno razlikujejo. Tako tele-sodelovanje omogoča učečim samostojno učenje in neodvisno delo v svojem tempu, kljub temu pa so del skupnosti podobno mislečih sovrstnikov.

Abstract: Despite common perceptions that individualized learning is one-to-one mentoring or adaptations of content and curriculum for individual students, the Global Students Laboratory demonstrates that learning, ironically, can be more individualized when students collaborate in globally-distributed groups. This paper explores how the web-based Global Lab platform enables student-directed projects where every learner is an explorer. Through participation in collaborative projects designed around instructional topics, students acquire both content and process skills. As they master collaborative problem-solving, we enable them to develop their own projects using a scaffolded environment. They apply everything they have learned, including how to use probes and collect quantitative and qualitative data. The platform supports probes and smartphone applications, enabling data to be streamed directly into the Global Lab database. There, all data is displayed on a world map based on

where each data set was collected, and students can graph, visualize, and analyze the information. Again, the irony is learners follow the same protocols and procedures to capture data, but the results always vary. Despite the sameness that is built into data collection, the data inevitably differ. This tele-collaborative inquiry allows learners to work on their own, at their pace, but as part of a community of like-minded peers.



Evropske digitalne kompetence

European Digital Competencies

Barbara Neža Brečko • EC JRC IPTS

Povzetek: Digitalna kompetenca je univerzalna in osnovna potreba za vse državljane za delo, življenje in učenje v družbi znanja. V mnogih evropskih državah je digitalna kompetenca prepoznana kot strateško pomembna tako v javnem kot tudi v zasebnem življenju državljanov. Digitalna kompetenca lahko izboljša številne vidike našega življenja; npr. socialni, zdravstveni, gospodarski, državljanski, kulturni, družbeni vidik. Evropski parlament in Svet Evrope sta že leta 2006 za doseganje ciljev na področju izobraževanja določila osem ključnih kompetenc – med njimi je tudi digitalna kompetenca. Koncept digitalne pismenosti in kompetence je močno prisoten in poudarjen v številnih dokumentih, ukrepih in pobudah evropske politike (Digital Agenda, Communication on rethinking education, Opening up education, Grand coalition for digital jobs ipd.).

Koncept digitalne kompetence je precej širok. Tako na akademskem kot na političnem področju obstajajo različne definicije in različna poimenovanja enakih konceptov. Tako nekateri avtorji govorijo o digitalni kompetenci, drugi o pismenosti, spet tretji o spretnostih. Da bi ustvarili soglasje o elementih digitalne pismenosti in da bi prispevali k boljšemu razumevanju digitalne pismenosti na evropski ravni, je bil sredi leta 2013 sprejet okvir digitalne kompetence za državljane, kjer je bilo definiranih pet področij digitalne kompetence in 21 pripadajočih kompetenc, ki so podrobno opisane in opredeljene glede na različne ravni usposobljenosti (DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe, EC JRC IPTS).

Dokument že ima nekaj implementacij: potrjen je kot smernica za razvoj šolskih kurikulumov in kurikulumov za izobraževanje učiteljev s strani evropske Tematske delovne skupine za IKT in izobraževanje (Direktorat za izobraževanje in kulturo), ki jo sestavljajo predstavniki evropskih ministrstev za izobraževanje. Prav tako je bil sprejet kot prispevek k akciji 62. Digitalne agende in sprejet kot okvir za zbiranje podatkov o e-spretnostih v Eurostatovi anketi gospodinjstev o uporabi IKT. Na osnovi obstoječega dokumenta se pripravljajo novi projekti: razvoj evropskega okvira digitalne kompetence za učitelje, razvoj indikatorjev za merjenje digitalne kompetence in drugi projekti.

Abstract: Digital competence is an universal and basic need for all citizens to work, live and learn in a knowledge society. In many European countries the digital competence is recognized as strategically important for both

the public and private lives of citizens. Digital competence can improve many aspects of our lives for example social, health, economic, civic, cultural, etc. In 2006, the European Parliament and the Council of Europe have set out eight key competences to achieve the objectives in the field of education and among them is also the digital competence. The concept of digital literacy and competence has a strong presence and prominence in many European policy documents, actions and initiatives (e.g. the Digital Agenda, Communication on rethinking education, Opening up education, Grand coalition for digital jobs).

The concept of digital competence is quite wide – both in academic and political field there are different definitions and description of the same concepts. Thus, some authors talk about the digital competence, some about digital literacy and others about digital skills. To build a consensus on the elements of digital competence and to contribute to a better understanding of digital competence at European level in 2013 the framework for digital competence for citizens was published. The framework defines five areas of digital competence with 21 competencies which are described and defined in terms of different proficiency levels (DIGCOMP: A Framework for Developing and Understanding Digital Competence and Europe, EC JRC IPTS).

The document already has some implementations – it is confirmed as a guideline for the development of school curricula and curricula for teacher education by the European Thematic Working Group on ICT and Education (Directorate for Education and Culture), consisting of representatives of the European ministries of education. It has also been adopted as a contribution to the Action 62 of the Digital Agenda and adopted as a framework for collecting data on e-skills in the Eurostat survey on ICT use by households. Based on the existing document new projects are being prepared: (1) a framework of digital competence for teachers, (2) development of indicators for measuring digital competence and other projects.

Kompetence za 21. stoletje v projektu Uvajanje e-gradiv in e-storitev

21st Century Competencies in the Project Introduction and Using of e-Materials and e-Services

Simona Slavič Kumer • Zavod RS za šolstvo

Povzetek: Kompetence za 21. stoletje so ključnega pomena za razvoj posameznika in njegovo uspešno delovanje v sodobni družbi. Lahko jih razdelimo v pet širših kategorij: analitične spretnosti, medosebne spretnosti, procesiranje informacij, sposobnost učenja in spreminjanja ter sposobnost udejanjanja. V prispevku bomo predstavili, kako in katere kompetence za 21. stoletje učenci razvijajo ob uporabi tabličnih računalnikov v projektu Uvajanje in uporaba e-vsebin in e-storitev. Predstavitev temelji na analizi povratne informacije, podane s strani učiteljev in svetovalcev Zavoda RS za šolstvo. Učitelji so v povratni informaciji, ki so jo podali po štirih mesecih uporabe tabličnih računalnikov pri pouku, zapisali opažanja in spremembe, ki so jih zaznali pri učencih. Iz njihovega zapisa lahko razberemo, da so učenci pri pouku ob uporabi tabličnih računalnikov v določeni meri razvijali kompetence na vseh omenjenih področjih, pri katerih izstopa področje procesiranja informacij oziroma digitalna kompetenca. Podobno lahko ugotovimo z analizo povratnih informacij spremljave pouka v drugem obdobju, ki so jo podali svetovalci Zavoda RS za šolstvo. Iz ugotovljenega lahko sklepamo, da učenci ob delu s tabličnimi računalniki razvijajo kompetence za 21. stoletje in da lahko z načrtnim in sistematičnim pristopom k integraciji kompetenc v načrtovanje in izvedbo pouka njihov razvoj na vseh področjih dodatno spodbudimo.

Abstract: The 21st century competencies are crucial for the development and success of individuals in the modern society. 21st century competencies can be divided into five categories: analytical skills, interpersonal skills, ability to execute, information processing and capacity for change/learning. This paper shows which and how 21st century competencies are developed by students who as a part of the project called "Introduction and Use of e-Materials and e-Services" use tablet computers during their lessons. The presentation is based on the analysis of the feedback given by teachers and the NEIS advisors. Teachers gave their feedback after four months of work in the project and they reported what changes in the students' skills they had noticed.

The analysis shows that students have improved their competencies in all five categories; specifically they have improved the digital competence. The same results can be obtained from the analysis of NEIS advisers' feedback, which they wrote after attending the lectures in the second period of the project. We can conclude that students develop 21st century competencies by using tablet PCs and that it is possible to additionally improve their skills, knowledge and attitude by means of systematic integration of those competencies into lesson planning and teaching.



Podpora pri uporabi razvitih e-vsebin in e-storitev – Zgodba pilotnega projekta

Support for the use of the developed e-content and e-services – The story of a pilot project

Janko Harej • Arnes

Amela Sambolić Beganović • Zavod RS za šolstvo

Povzetek: Pričujoči prispevek obravnava sodobne oblike pomoči sodelujočim učiteljem v pilotnem projektu pri uporabi e-vsebin in e-storitev, ki jih razvijamo v okviru projektov E-učbeniki s poudarkom na naravoslovnih vsebinah v osnovni šoli in E-šolska torba. Namen prispevka je opisati dve področji podpore v pilotnem projektu, ki sta prilagojeni potrebam in zahtevam učiteljev na področju uporabe IKT. Prvo področje pomoči učiteljem obsega didaktično-tehnična svetovanja, drugo je usmerjeno v zagotavljanje kakovostnih in ažurnih informacij na ravni spletišča SIO s poudarkom na primerih dobrih praks. Zaradi kompleksnosti obeh področij (na eni strani zahtevna vzpostavitev osnovne IKT infrastrukture, razvoj e-storitev, e-vsebin ter uporaba le-teh v praksi) imata razdeljeno vlogo in naloge dveh “akterjev” – Zavod RS za šolstvo in Arnes.

Abstract: The presentation focuses on modern support for teachers who participate in the pilot project Implementation of e-content and e-services. They are being developed in two projects: E-student books for natural and social science in primary schools and E-schoolbag. The goal is to demonstrate two areas of support, which are designed to suit the needs and requirements in the use of ICT in classes. The first area of support includes didactic-technical consultations, and the second covers the provision of quality and up-to-date information on the SIO portal, drawing on examples of good practice. The complexity of both areas (basic infrastructure ICT provision, the development of e-content and e-services, the use in practice) is covered by two institutions: the National Education Institute and ARNES.

Odprto izobraževanje na Osnovni šoli Savsko naselje in v Vrtcu Trnovo v okviru iniciative Opening up Slovenia

Open Education at the primary school Savsko naselje and kindergarten Trnovo in the frame of Opening up Slovenia initiative

Suzana Antič • Vrtec Trnovo

Verica Šenica Pavletič • Osnovna šola Savsko naselje

Marjeta Pučko • Šolski center Kranj

Mihajela Črnko • Institut Jožef Stefan

Povzetek: Inicijativa Opening up Slovenia – Odprimo Slovenijo z izobraževanjem temelji na podlagi smernic Evropske komisije Opening up Education in zajema dejavnosti na štirih področjih: na odprtih učnih okoljih, prosto dostopnih učnih gradivih, povezanosti in inovativnosti ter izkoriščanju priložnosti digitalne revolucije. Smernice sovpadajo z opažanjem pedagoške prakse, da nove generacije potrebujejo nov vrednostni preskok na izobraževalnem področju, saj izkazujejo drugačen način razmišljanja in prinašajo nove trende, z njimi pa nove potrebe in nove izzive. Potreba po preboju našega izobraževalnega sistema iz togega, v kurikulum ozko zapetega pedagoškega procesa je tako vodila v vzpostavitev razvojno-demonstracijskega centra na Osnovni šoli Savsko naselje in kroskurikularnega središča za razvoj odprtega učenja v Vrtcu Trnovo.

Dejavnosti v smernicah iniciative Opening up Education na osnovni šoli in v vrtcu že potekajo. Med drugimi na podlagi informacijsko-komunikacijskih tehnologij in prosto dostopnih učnih virov potekajo projekti, ki omogočajo produktivno okolje za vzgojitelje, učitelje, učence, študente, raziskovalce in druge zainteresirane javnosti ter tudi okolje za ustvarjanje kakovostnih vsebin in iskanje in razvoj novih paradigem poučevanja in učenja. Z inovativnimi projekti in z deljenjem dobrih praks osnovnih šol in vrtcev se tako spodbuja inovativnost in omogoča razvoj odprtega izobraževanja.

Abstract: “The Opening up Slovenia – Odprimo Slovenijo z izobraževanjem” initiative is based on Communication of European Commission entitled “Opening up Education” and encompasses activities in four distinct areas: open learning environments, open education resources, connectivity and innovation, and seizing the opportunities of the digital revolution. This Communication

agrees with the observations from pedagogical practice which show that new generations require a change in values in the field of education because of their different way of thinking and new trends, which in turn create new needs and new challenges. The need to free our education system from the rigid pedagogical process that is tightly tied by the curriculum has therefore resulted in the establishment of a development and demonstration centre at the Savsko naselje primary school and a Global Cross-curricular Centre for developing Open Minded Learning Approach at the Trnovo kindergarten.

The activities within the framework of the Opening up Education initiative have already started at the primary school and the kindergarten. On the basis of information and communication technologies and open education resources, there are currently projects under way which allow for a productive environment for childcare workers, teachers, pupils, students, researchers and other stakeholders, and also secure an environment that is conducive to creating quality content and finding and developing new paradigms of teaching and learning. Through innovative projects and sharing of good practice in primary schools and kindergartens innovation is encouraged and the development of open education is enabled.

3.

NeTičNeMiš – TechMeet • TechMeet

NeTičNeMiš – TechMeet

SIRikt 2013 presents its third TeachMeet event

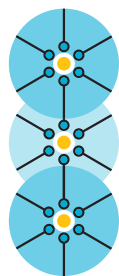
Na letošnji konferenci SIRikt bo že četrtič organiziran dogodek TeachMeet, ali po naše NeTičNeMiš.

TeachMeet je organizirana, vendar neformalna oblika srečanja učiteljev, ki drug drugemu predstavljajo primere dobrih praks, novosti in odlične ideje rabe IKT pri pouku. Posebnost TeachMeet-a je v zgoščenosti, duhovitosti in jedrnatih opisih dobrih rešitev v šolski praksi.

Glavni namen TeachMeeta, ki so ga leta 2005 osnovali na Škotskem, je v sproščnem okolju prisluhniti zgodbam inovativnih učiteljev, deliti navdušenje ob uspešnih poskusih in razmisliti o drugačnih pristopih pri neuspešnih. Ker gre za neformalno druženje z obilo smeha in dobre volje, se sprosti kreativnost, ustvarjalnost in radovednost nastopajočih. Edino pravilo, ki ga mora nastopajoči upoštevati, je, da mora svojo predstavitev strniti v pet minut.

A TeachMeet is an organized but informal meeting of teachers who wish to share examples of good practices, practical innovations and personal insights in teaching with ICT. Participation is entirely voluntary. A range of new ideas, materials and programmes presented at the event offer a welcome opportunity for participants to exchange information on useful and successful classroom practices.

The main purpose of TeachMeet, which was first conceived in 2005 in Scotland, is to provide a relaxed atmosphere in which innovative teachers can share their stories, spread their enthusiasm about innovations and also reflect on their less successful practices. The informal nature of the event guarantees a lot of fun and laughter, which inspires creativity and curiosity. The only rule the participants have to follow is that their presentations do not exceed the time limit of five minutes.



Evropski teden mobilnosti

European week of mobility

Nada Rajtman • Vrtec Ljutomer

Povzetek: V prispevku, ki ga predstavljam v obliki digitalne zgodbe, bom predstavila širše sodelovanje našega vrtca z občino Ljutomer in drugimi institucijami. Ideja o tovrstnem dogajanju in sodelovanju je prišla s strani občine in z veseljem smo se odzvali. Razmišljala sem, kako bi enotedenske dejavnosti strnila v celoto in jih slikovito prikazala z dogajanjem v našem vrtcu, občini, mestu, med zaposlenimi itd. Namen projekta mobilnosti je bil osveščati javnost o dejanski situaciji, v kateri živimo. Naloga nas odraslih je, da prenašamo vrednote že na najmlajše v vrtcu in smo jim zgled, da je gibanje gibal našega življenja. Gibanje je zdravje, gibanje je veselje. V zgodbi sem zajela nekaj filmov, ki predstavljajo, kako zavzeto so se zaposleni odpravili v službo peš, kako radi sodelujejo otroci, kjer je glasba in gibanje združeno v prijetno druženje na našem trgu v mestu. Mislim, da je prav film dokaz suverenega dogajanja, ki se v zgodbi predstavlja. Dogodke sem predstavila v kronološkem zaporedju. Fotografije sem opremila z opisi in pojasnili. Da je zgodba zanimivejša in dinamična, pa sem dodala v ozadju glasbo. Izbrala sem našo Fit himno vrtca, saj smo že veliko let v programu Fit, kjer skrbimo ravno za gibanje. Ostala glasba je znana in sem jo izbrala po občutku.

Prispevek je zelo uporaben pri naših predstavitvah dela s starši, kronološke ali splošne predstavitve in promocija občine. Program, ki sem ga uporabila, je Movie Maker, ostale materiale pa sem pridobila s fotoaparatom in kamero.

Abstract: This contribution in the form of a digital story presents the wider cooperation of our nursery with the Ljutomer municipality and other institutions. The idea for such events and cooperation came from the Ljutomer municipality and we responded with great joy. I was thinking, about how to summarize and graphically present the events in the nursery, the municipality, the city of Ljutomer and among the employees. The purpose of this mobility project was to raise public awareness of the current situation. It is the adults' task to be an example and pass on to the youngest generations even in the nursery that movement is the driving force of our life. Movement is health and movement is joy. In the story I had presented a few video clips showing how enthusiastically the employees walked to work and how joyfully the children cooperated when music and movement was joined on the town square. I believe the video testifies to the sovereignty of events. The events are presented in chronological order. Photographs are complemented with descriptions and explanations. I have incorporated music in the background of the video to add dynamics. For this

I have chosen the fit anthem of our nursery, as we have been involved in the national fit program for many years. Other added music is well known and was chosen by instinct. This contribution can be used in different settings, such as presentations of our work to the parents, chronological presentations, general presentations and promotion of the municipality. I obtained the material for the video with a camera and video camera edited it with Movie Maker.

Vrednotenje nalog iz e-učbenika in diferencirano preverjanje naravoslovnega znanja v e-učilnici

Evaluation of e-textbook tasks and differentiated assessment of science knowledge with the use of virtual classroom

Manja Kokalj, Uroš Ozmec • Osnovna šola Selnica ob Dravi
Franc Jakoš • Osnovna šola Janka Glazerja Ruše

Povzetek: V projektu Uvajanje in uporaba e-vsebin ter e-storitev uporabljajo učenci 7. a tablične računalnike pri petih predmetih. Pri naravoslovju smo vključevali vsebine in naloge iz e-učbenika, zato smo ovrednotili prednosti in slabosti reševanja nalog. Za pomanjkljivosti smo našli ustrezne rešitve v obliki preverjanja znanja v e-učilnici, ki smo ga izdelali v izobraževalnem e-okolju Moodle. Vprašanja pri preverjanju so različnih tipov, vsebujejo pestre oblikovne elemente in obsegajo vseh šest taksonomskih stopenj po Bloomu, vključen je tudi diferenciran pristop. Dodano vrednost vidimo v takojšnji povratni informaciji. Vsebine iz e-učilnice lahko v obliki obnovitvene datoteke posredujemo zainteresiranim učiteljem. Spremljali smo dosežke učencev in preverjali, kako dosegajo učne cilje ter nadgrajujejo svoje IKT veščine. Preverili smo tudi, ali uporaba e-vsebin in e-storitev izboljša razumevanje in znanje učencev. Testni oddelek smo primerjali z učenci 7. b ter učenci iz sosednje šole, ki pri obravnavi iste snovi niso uporabljali IKT tehnologije. Rezultate smo analizirali in prišli do zaključkov, da imajo učenci s tablicami večjo motivacijo za učenje, izboljšali so digitalno pismenost, omogočili smo jim več diferenciacije in individualnega pristopa ter bolj spodbujali njihove miselne procese na višjih kognitivnih stopnjah. Večje razlike v znanju pa se bodo najverjetneje pokazale po daljšem obdobju evalvacije.

Abstract: Within the project Implementation and use of e-contents and e-services, the students of 7. A at our school use tablet computers in five subjects. In science we introduced the e-textbook based contents and tasks and evaluated their advantages and disadvantages when used in class. Our work resulted in some appropriate solutions (knowledge assessment tools) designed in Moodle virtual classroom environment. The questions which have been set contain many design elements and vary according to the type and Bloom's taxonomy. The approach we use is differentiated; the immediate feedback represents the added value. The virtual classroom contents can be used by other teachers, if interested. We monitored students' achievements and assessed

how they reached the set objectives and how they upgraded their ICT skills. At the same time we evaluated how the use of e-contents and e-services affected the level of understanding and knowledge with students. Our trial class (7. A) was compared with our 7. B class and with the same age group of students from the neighbouring school who didn't use ICT when learning the same topic. The results show that students who use tablet computers have higher motivation for learning and that they have improved their ICT literacy. At the same time we were able to differentiate the tasks, use the individualised approach and encourage students to use higher order thinking skills. It should be mentioned that one can expect greater differences in students' knowledge after a longer period of time.

Z mobilnikom po zaklad

Mobile treasure hunt

Polonca Vodičar, Tadeja Zupanc • Osnovna šola Vranksko-Tabor

Povzetek: Živimo v času “pametnih” naprav, ki nas spremljajo vsepovsod. Če želiš biti v “pametnem” koraku z učenci, moraš v svoj pouk vključevati tudi “pametno” tehnologijo. Sva predmetni in razredni učiteljici. Izvedli sva manjši medrazredni projekt, v katerem so sodelovali učenci tretjega razreda in učenci osmih in devetih razredov, ki obiskujejo geografski krožek. Člani geografskega krožka so poglobljali temo kartografije in domače pokrajine tako, da so tretješolcem skrili zaklade na zgodovinsko in geografsko pomembne točke na Vranskem. Skrivališča zakladov so objavili na spletnem mestu www.geocaching.com, kjer so predstavili točke in vpisali koordinate. Člani krožka so si pri opisih točk pomagali s svetovnim spletom, kjer so iskali informacije, jih preverjali in kritično vrednotili. Tretješolci so spoznali svoj domači kraj, ustanove v kraju, dediščino domačega kraja, spoznali so zemljevid, smeri neba, se naučili uporabljati zemljevide in skice. S pomočjo skic so iskali zaklade v bližini šole. Pri svojem delu so uporabljali različna e-gradiva. Kot zaključek celotnega projekta pa so se s telefoni v rokah podali na lov za zakladi.

Tako učenci osmih in devetih razredov kot tretješolci so pridobili dragocena znanja, ki jih bodo uporabljali v nadaljnjem življenju. Oboji so na praktičnem primeru spoznali uporabo telefona v drugačne namene, kot so jih vajeni.

Abstract: We live in times of “smart” devices that accompany us everywhere. If you want to keep in a “smart” step with the pupils, you must also use “smart” technology during the lessons. We are a specialist subject teacher and a single class teacher.

We carried out a minor class project with the third grade pupils and the eighth and ninth grade pupils who attend the geographical extra-curricular activity. The eighth and ninth grade pupils learned more about the cartography and domestic landscapes. They also hid some treasures on historically and geographically important points in Vranksko and the third grade pupils had to find them. They published the treasures' locations on the Web site <http://www.geocaching.com/> where they presented the points and entered the coordinates. The pupils of the geographical extra-curricular activity helped themselves with the Internet where they were looking for, checking and evaluating the information. The third grade pupils learned more about their hometown, its institutions and heritage, and about a map and the directions in the sky, they learned how to use maps and sketches. They were looking for treasures around the school by using sketches. They have used different e-learning materials. At the end of the project they started their treasure hunt with mobile phones in their hands. All pupils have gained valuable knowledge they will use in their further lives. They used mobile phones for a completely new purpose as they used to.

Francoska revolucija – Animirana izobraževalna igra

French revolution – Animated educational game

Boštjan Kernc, Nina Arlič, Miha Kavšek

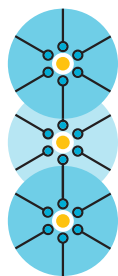
Povzetek: Animirani prikaz Francije leta 1789 in dogodkov, ki simbolno in konkretno predstavljajo rojstvo modernega sveta, želi na privlačen in hkrati kakovosten način pridobiti uporabnika za spoznavanje in osebno vživljanje v zapleteno in večplastno zgodovinsko obdobje. Slikoviti prikazi in vmesne izobraževalne igre ciljajo predvsem na mlajšo, gibljivih podob vajeno generacijo.

Samostojno učno gradivo najprej s prikazom družbenega stanja, akterjev in idejnega sveta konca 18. stoletja uporabnika pripravi na potovanje od začetka do konca revolucije, pri čemer je z razvrščanjem, izbiranjem in dopolnjevanjem besedil, preglednic in slikovnega gradiva dejavno vključen v miselni in politični svet prevratnega časa. Ob spoznavanju zgodovinskih dejstev in vživljanju v posamezne akterje želi animacija uporabnika opozarjati tudi na obča družbena vprašanja, npr. o svobodi, enakosti, demokraciji, medijih, nasilju, prikazovanju zgodovine ipd.

Pri svojem šolskem delu ugotavljam, da je glede na zainteresiranost učencev za elektronska gradiva le-teh precej malo; pogosto se dogaja, da v želji po približanju snovi klasična gradiva le prenesemo v elektronsko obliko. Menim, da bi morali gradiva ustrezno pripraviti za nove medije, saj nam ponujajo ogromno možnosti. Upam, da je pričujoča predstavitev ustrezen primer rešitve.

Abstract: The aim of the animated presentation of France in 1789 and the events, which symbolically and concretely illustrate the genesis of the modern world, is to encourage the users to familiarize themselves in an interest-catching and quality manner with the complicated and multilayered period of history and to become personally engaged in it. The picturesque depictions and educational game inserts target predominantly the young generation, accustomed to moving images.

Through portrayal of the social condition, the main characters and the ideas prevailing at the end of the 18th century, the independent learning material first embarks the users on a journey from the beginning till the end of the revolution and engages them in active participation in the ideological and political background of the turbulent period by classifying, selecting and completing texts, tables and visual materials. Besides familiarizing the users with historical facts and making them identify themselves with individual personalities of the time, the animation also draws their attention to other general social issues, such as



the questions of freedom, equality, democracy, media, violence, presentation of history, etc.

In my teaching practice, I have found that, despite the interest of pupils in electronic materials, the latter are rather rare and that, in order to make pupils more familiar with the subject matter taught, classical materials are frequently converted into electronic form. I deem the existing classical materials should be adequately adapted to new forms of media since they offer numerous possibilities. I hope this presentation to be an exemplary solution.

IKT je bila ključni dejavnik pri izdelavi projektne naloge v okviru projekta Slovenski učni krogi

ICT was teh key factor in writing assignment within the project Slovenian learning circles

Roman Živič • Šolski center Slovenj Gradec

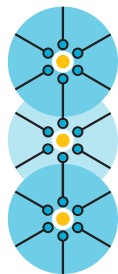
Povzetek: V šolskem letu 2013/2014 smo na naši šoli sodelovali v polletnem projektu Sodelovalni projekti na daljavo s pomočjo metodologije učnih krogov ob uporabi informacijsko-komunikacijske tehnologije – IKT. Namen projekta je širjenje smiselne uporabe sodelovalnih projektov na daljavo s pomočjo metodologije učnih krogov ob uporabi IKT ter dvig kakovosti uporabe projektne pristopa in vključevanje le-tega v redno šolsko delo. V prispevku analiziram vlogo in uporabnost posameznih komponent IKT pri projektu.

Elektronska pošta nam je omogočila hitro in enostavno obveščanje vseh udeležencev o novostih, spremembah in dogovorih. Prek Facebooka smo javnost obveščali o poteku projekta, ustanovili smo tudi Facebook skupino. Internet je bil vir informacij. Wiki delovno okolje je omogočilo, da smo imeli ves čas dostop do poteka projekta. Prek videokonference VOX smo se dogovarjali o zaključnem srečanju. S pomočjo računalniških programov so nastali številni izdelki.

Na podlagi odzivov vseh udeležencev ugotavljam, da je sodelovanje v projektu prineslo za vse sodelujoče napredek v uporabi IKT. Rezultate projekta smo predstavili tudi drugim učencem na šoli in širši javnosti prek spletne strani in Facebooka, zato menim, da smo z izpeljavo projekta dokazali nujnost uporabe IKT in njene prednosti.

Abstract: In the school year 2013/2014 our school has participated in a six-month project Collaborative projects at a distance using the methodology of learning circles together with information and communication technologies - ICTs. The purpose of the project is to disseminate meaningful use of collaborative projects at a distance using the methodology of learning circles and ICT, and to raise the quality of use of project-based approach and the integration of it into a regular school work. This paper analyzes the role and usefulness of individual components of the ICT project.

E-mail enabled us to quickly and easily inform all participants of updates, changes and arrangements. Via Facebook, we informed the public about the project, we set up a Facebook group. The Internet is a source of information. Wiki working environment made it possible that we had a constant access to



project's progress. Via videoconference VOX we agreed on the final meeting. With the help of computer programs, we created a number of products.

Based on all participants' responses I find that participation in the project brings advances in the use of ICT to all those participating. The results of the project were also presented to other students in our school and the wider public through the website and Facebook, so we feel that by carrying out the project we proved the necessity of the use of ICT and its benefits.

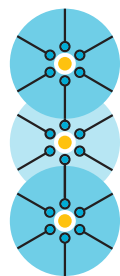
Glasovanje v oblaku

Voting via clouds

Maja Kosmač Zamuda • Gimnazija Antona Aškerca, Šolski center Ljubljana

Povzetek: V prispevku predstavljam uporabo glasovalnih oblakov Kliker in Socrative na pametnih telefonih. Z uporabo Klikerja in Socrativa pri pouku namreč dijake postavimo v aktivno vlogo učečega, saj dijaki samostojno na svojih telefonih rešujejo naloge, ki jih vnaprej pripravi učitelj, odgovore pošljejo učitelju ter takoj dobijo povratno informacijo. V osrednjem delu nato navajam praktični primer učenja in preverjanja znanja z uporabo glasovalnega oblaka Kliker pri pouku slovenščine in ga v sklepnem delu vrednotim tako, da ga primerjam z glasovalnim oblakom Socrative, tj. navajam prednosti in pomanjkljivosti tako enega kot drugega glasovalnega oblaka zlasti s stališča učenja in poučevanja literature pri slovenščini.

Abstract: This paper deals with the presentation of the use of Kliker and Socrative voting clouds on smart phones. By using Kliker and Socrative during lessons the students are imposed the role of active learning since they work out independently the exercises the teacher has prepared in advance. They send their answers to the teacher via their smart phones and get feedback information instantly. The central part features a practical case of learning and competence testing by using the Kliker voting cloud during lessons of Slovenian language. In the final part of the paper, I have evaluated it by comparing with to the Socrative voting cloud, i.e. I have given the advantages and disadvantages of either voting cloud from the point of view of learning/teaching literature during lessons of Slovenian language.



Video predstavitev kot prednostna komponenta e-listovnika pri iskanju zaposlitve

Video promotion as the e-portfolio priority component in finding employment

Dejan Paska • Srednja šola za oblikovanje Maribor

Povzetek: Namen prispevka je predstaviti alternativni način oblikovanja življenjepisa v obliki video predstavitve kot prednostne komponente e-listovnika pri iskanju zaposlitve ali dela. E-listovnik, kot sodobna oblika portfelja, omogoča ob zbiranju lastnih dosežkov tudi alternativne načine osebne predstavitve s ciljem aktivnega iskanja zaposlitve na skupnem evropskem trgu dela.

Običajni načini iskanja zaposlitve ali dela v današnjem svetu, ki temelji na podobah, običajno niso dovolj učinkoviti, zato je treba uporabiti alternativne pristope, prilagojene današnjemu času. Video predstavitev, kot oblika multimedijske predstavitve, vsebuje močan retorični potencial. Z detajli, ki jih uporabimo v videu (barva, podoba, gib, glas, glasba, oblika, tempo itd.) lahko gledalca prepričujemo razumsko, čustveno ali osebno, kar so hitro spoznala in v največji možni meri tudi izkoristila podjetja pri promociji izdelkov in storitev.

Namen prispevka ni enačiti promocije izdelka ali storitve s promocijo osebe, ampak zgolj uporabiti nekatera dognanja in rešitve s tega področja. Prav tako tudi strokovnjaki s področja upravljanja človeških virov uporabljajo besedno zvezo osebna blagovna znamka. Teoretične osnove v prispevku bodo utemeljene s primerjavo praktičnih izvedb dveh video predstavitev: Smiljana Škarice, bivšega dijaka SŠOM in mednarodno priznanega frizerja ter Andreje Šiler, dijakinje zaključnega letnika programa frizer.

Abstract: The aim of this paper is to present an alternative way of creating a CV in the form of video promotion as a priority component of e-portfolio in finding an employment or a job. E-portfolio, as a modern form of the common portfolio, among collecting personal achievements also allowing alternative ways of personal presentation with the goal of seeking employment in the common European labour market.

In today's image based world the conventional ways of finding an employment or a job are not sufficiently effective, so it is necessary to use alternative approaches, which are adjusted to our modern times. Video presentation, as a form of multimedia presentation, contains powerful rhetorical potential. The details, which are used in the video (color, image, movement, voice, music,

design, tempo, etc.) can convince the viewer by logic, emotion or ethic, which was realized by companies and used as far as possible in the promotion of products and services.

The purpose of this paper is not to equate the promotion of a product or a service with that of a person, but only to use some knowledge and solutions from this field. Even experts in the field of human resource management uses the phrase personal brand. Theoretical basis in the article will be substantiated by comparing the implementations of two video presentations. One is for Smiljan Škarica, a former SŠOM student and internationally renowned hairdresser, and the other is for Andreja Šiler, hairdresser student of the final year.

Naj bom e-vremenar? Zakaj ne?

Shall I become an e-weathercaster? Why not?

Jezerka Beškovnik, Maja Gržina Cergolj • Osnovna šola Lucija

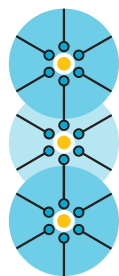
Povzetek: V 21. stoletju daljavo ne predstavlja več ovire in prednosti informacijske tehnologije postopoma ustvarjajo tudi učenje. V prispevku je predstavljen postopek sodobnega učenja, ki omogoča samostojno delo prav vsem, tudi deprivilegiranim skupinam, kot so učenci s posebnimi potrebami in tujci. Ideja predstavljene spletne učne poti je prikaz možnosti poučevanja, ki je prostorsko neodvisno od šole, a kljub temu pristno in aktualno. Učencem omogoča, da lahko od doma v proces učenja vključijo vse potrebne prilagoditve, kot so prostor, čas itd., in jim predstavlja motivacijo za samostojno delo z informacijsko tehnologijo (izvirna besedila, posnetki, glasba idr.), učitelju pa omogoča fleksibilno delo, povezovanje in sprotno evalvacijo.

Kombinacija zvrnjenega učenja na daljavo in spletne učne poti je prednost, ker se učenec predhodno seznaní s snovjo, ki jo šele kasneje teoretično obdelá, utrjuje in preveri. Ugotavljamo, da je izhajanje iz pristnih virtualnih vsebin učencem motivacijsko močnejše in obenem tisto, kar nam prinaša kakovosti globokega učenja. Učenje v realnem času in uporaba IKT so prednosti informacijske tehnologije in vir pozitivne naravnosti do učenja. Otrok ne prestrašijo temveč večjajo pozornost in informacije globlje sedejo v spomin. Občutki sreče in zadovoljstva ob raziskovanju, ustvarjajo pogoje za lažji pretok znanja. Predstavljena spletna stran je virtualna praksa, v kateri se prepletajo predpriprava, ustvarjalnost in samovrednotenje.

Abstract: In the 21st century distance is no longer an obstacle, and the advantages of information technology are gradually changing the way of teaching. The contribution describes modern teaching methods which enable individual work to everyone, including unprivileged groups, such as students with special needs and foreigners. The idea of the website presented is to show the options for learning which are independent from school in terms of space, yet authentic and up-to-date. It enables students to incorporate all necessary adjustments into the learning process, such as space, time, way of learning, etc. In this way pupils are highly motivated to do individual work with information technology (original texts, recordings, music etc.), whereas regarding teachers, it enables flexible work, integration and continuing evaluation. The combination of flipped long-distance learning and on-line learning paths is an advantage, as the student gets acquainted with the topic beforehand, whereas theoretical processing, revision and evaluation are done later. We have established that it is much more motivational for students to

originate from authentic virtual content as it simultaneously leads to the quality of deep learning.

Real-time learning and the use of ICT are the advantages of information technology and the source of a positive attitude towards learning. The pupils are not scared any more, their attention is increased, meaning that the information is stored deeper in their memory. The feeling of happiness and satisfaction while doing research create favourable conditions for an easier transfer of knowledge. The presented website is virtual practice combining pre-preparation, creativity and self-evaluation.



Sodelovalno učenje fizike s tablicami

Cooperative learning in physics lessons with a tablet PC

Mirijam Pirc • Šolski center Nova Gorica

Povzetek: V pouk fizike sem začela uvajati sodelovalno učenje leta 2006. Od takrat naprej uporabljam pri pouku dve metodi: izvirno sestavljanke in sodelovalne karte. Pri metodi izvirna sestavljanke vsak član skupine rešuje svojo nalogo, ki jo nato predstavi ostalim učencem v skupini. Pri metodi sodelovalnih kart učenci menjavajo vloge tako, da pri ponavljanju v parih izmenično prevzemajo vlogo učenca in učitelja. V zadnjem letu pa sem to učenje nadgradila z uporabo tablic.

Sodelovalne karte sem pripravila s pomočjo spletne strani **Cram.com**, kjer lahko učenci preverjajo svoje znanje tako, da odgovarjajo na vprašanje, ki je zastavljeno na eni strani karte. Sošolec v paru vidi drugo stran karte in kontrolira ter beleži pravilne oziroma napačne rezultate.

Pri metodi izvirne sestavljanke pa uporabljam interaktivne naloge, kjer se podatki v nalogah spreminjajo. Vsak učenec mora v prvi uri svojo nalogo pravilno rešiti, jo fotografirati in poslati sošolcem, ki so z njim v skupini. V naslednji uri pa si morajo učenci naloge razložiti drug drugemu.

Uporaba tabličnega računalnika prinaša v pouk spremembo in dodano vrednost. Učenci raje kot s papirnati kartami, utrjujejo snov s kartami na tabličnih računalnikih. Velika prednost je ta, da se karte ne izgubijo in jih lahko takoj uporabijo. Naloge s spreminjajočimi podatki imajo dve prednosti. Učenci jih ne morejo samo prepisati od sošolca pa tudi jih lahko večkrat rešujejo, ker so rezultati vsakič drugačni.

Abstract: I introduced cooperative learning in my physics lessons in 2006. Since then I have been using two different methods of cooperative learning: the original group compound and cooperative cards. When students use the method of original group compound, every member of the group does his exercise and then he presents it to other members of the group. Students exchange roles, so that they play a role of a student and a teacher alternatively, when they use the method of cooperation cards.

In the last year I upgraded the cooperative learning with the use of tablets. Cooperative cards were made on **www.cram.com**, where students can check their knowledge by answering the question which is on the front side of the card. Meanwhile the other student sees the answer on the back side of the card and checks and writes down notes on the performance of his colleague.

When students use the method of original group compound I use interactive exercises where the data changes. Each student must solve correctly his exercise in the first lesson, then take a photo of it and send it to other members of the group. In the next lesson students explain their exercise to the rest of the group.

The use of tablets brings a change to our lessons. Students prefer learning with tablets to learning on paper. The learning material is always at hand and it is cannot be lost. That is a big advantage. The interactive exercises have two priorities. Students cannot copy exercises from their schoolmates and they can repeat the exercise several times because the solutions will always be different.

Zvrnjeno učenje prek foruma v spletni učilnici

Flipped learning through a bulletin board in an e-classroom

Moja Janžekovič • Osnovna šola Toma Brejca Kamnik

Povzetek: Pri pouku skušamo učence naučiti, da znajo določene informacije uporabiti v vsakdanjem življenju, kritično razmišljati in iskati argumentirane odgovore na aktualna vprašanja. Pri preverjanju znanja nas zanima, kako razumejo obravnavane vsebine in jih uporabljajo na nov način ter v novih okoliščinah, rešujejo probleme, primerjajo, sklepajo in utemeljujejo, kako svoje ideje in ugotovitve predstavljajo, koliko so pri tem kritični in ustvarjalni (Rutar Ilc, 2003). To lahko učenci dosežejo tudi s sodelovanjem v forumu, s katerim se hkrati učijo uporabljati računalniška orodja, spletne komunikacije in argumentacije.

V spletni učilnici odpremo dva foruma – enega za učence, v katerem bodo odpirali lastne teme, debatirali, argumentirali in moderirali, drugega pa za odgovarjanje na učiteljeva vprašanja. Učenci morajo aktivno sodelovati v forumu, iskati rešitve in odgovarjati na vprašanja sošolcev. Argumentirana mnenja morajo podkrepiti s slikovnim materialom in/ali citati strokovnjakov in verodostojnih zapisov oziroma spletnih strani. Cilji takega dela so spodbujati učenje za življenje, uporaba različnih veščin, razvijanje kritičnega mišljenja, argumentacije in ustvarjalnosti ter usmeriti učence v raziskovanje koristnosti računalništva. S tem dosežemo, da je učenec aktiven na več ravneh in da pridobiva vseživljenjsko znanje. Zaradi dinamike in sproščenejšega poteka ure je tako poučevanje in ocenjevanje pri učencih zelo priljubljeno.

Abstract: The teacher's role in the classroom is to teach pupils to use a particular piece of information in everyday life, to think critically and to find meaningful answers in everyday situations. In order to assess knowledge, the pupil has to put the teaching contents into different situations, solve problems, compare, conclude and explain while maintaining a critical opinion as well as creativity (Rutar Ilc, 2003). Pupils may achieve all of the above-mentioned learning goals by participating in a bulletin board. Furthermore, they also deepen their skills of using a computer, Internet communication and argumentation. In the e-classroom, two bulletin boards are published. One of them is a platform for debates on a subject matter, expressing opinions and moderating. The other one serves as an answer-forum for the teacher's questions. The pupils have to participate actively, search for solutions and give opinions and answers to their schoolmates' questions. Attached to their posts are pictures or/and

quotes of experts and reliable book or Internet sources. The goals of this activity include life learning, use of various skills, and development of critical thinking, argumentation and creativity. The activity immerses the pupils into the process of re-evaluating the usefulness of the World Wide Web. Pupils become actively involved on many levels and gain a lifelong knowledge. Due to its diversity and casualness, this method of teaching and assessing is very popular with the pupils.

Tablični računalniki in spletne interaktivne naloge za učenje in poučevanje angleščine

Tablet computers and on-line interactive exercises in studying and teaching English

Vera Stoilov Spasova • Osnovna šola Naklo

Povzetek: S pomočjo tabličnega računalnika, brezžične internetne povezave in interaktivnih nalog na spletu je postalo učenje angleščine zanimivejše, poučevanje pa precej lažje, saj so učenci bolj motivirani. Pri svoji uri uporabljam spletno stran za izdelavo interaktivnih nalog na spletu, za katero je treba ustvariti samo uporabniški račun. Gre za brezplačno stran, ki uporabnikom omogoča, da ustvarijo različne tipe nalog, v katere je mogoče vstaviti besedilo, slike, avdio in video posnetke. Na strani je mogoče ustvariti križanke, različne igre, časovni trak, oznake v besedilu, miselne vzorce, kvize ipd. Možno je tudi vstavljanje dodatnega besedila oziroma vprašanj v avdio ali video posnetke. Tablični računalnik je zelo uporaben tudi za spletno aplikacijo Kliker, ki učence vzpodbuja k aktivnemu učenju, učiteljem pa omogoča takojšnjo povratno informacijo o razumevanju snovi.

Abstract: A tablet computer, a wireless Internet connection and on-line interactive exercises have made studying English much more interesting and teaching has become easier because the students are more motivated. In my lessons I use a website for creating interactive on-line exercises. The website is free and you only need to create an account. The mentioned site enables the user to create various types of exercises where you can insert texts, images, audios and videos. You can create different games, quizzes, crosswords, mind maps, cloze tests, number lines, etc. There is also a template with the possibility to enrich an audio or video recording with additional information banners. A tablet computer is also very useful for the application called Kliker (classroom response system) which motivates students to actively engage in studying and the teacher gets immediate feedback about the students' understanding.

Sodelujem in vrednotim tudi s pomočjo e-orodij

I cooperate and evaluate also with ICT

Tina Žagar Pernar, Tatjana Lotrič Komac • Osnovna šola Naklo

Povzetek: Predstavljeni primer, vključujoč sodelovalno učenje, načela fit pedagogike in IKT (e-listovnik, tablični računalnik, anketni vprašalnik), spodbuja k razvijanju lateralnega oziroma kritičnega mišljenja, pri čemer se učenec zaveda, da je proces učenja dolgoročni proces, na katerega lahko vpliva in mora zanj prevzeti odgovornost ter kritično distanco.

Pri projektu EUfolio in pilotnem uvajanju tabličnih računalnikov v osmem razredu sta avtorici ugotovili, da je sistematičen pristop h kritičnemu mišljenju procesno naravnana, zato je njegova vpeljava nujna od najzgodnejših faz otrokovega razvoja. Skladno s tem je bila izbira novega pristopa poučevanja pri slovenščini v šestem razredu logična. Po obravnavi različnih literarnih vrst so morali učenci prek skupnih dokumentov tvoriti zgodbo – izbrali so eno izmed literarnih vrst (detektivska, fantastična, pustolovska, znanstvenofantastična) in napisali začetek. V nadaljevanju so večkrat zamenjali mesta, opravili gibalno vajo in nadaljevali začeto. Pri tem so morali prebrati napisano in ga smiselno nadgraditi. Po pisanju so izdelke pravopisno in vsebinsko ovrednotili ter povratne informacije posredovali vsem tvorcem zgodbe. Sledila je refleksija opravljenega dela v obliki spletne ankete.

Izkazalo se je, da je tako delo za učence zahtevno, ker ga niso vajeni, je pa imelo velik doprinos za slabše učence, saj so zaradi odgovornosti do skupine napredovali bolje.

Abstract: The shown example, which includes cooperative learning, the principles of the so called fit pedagogy and ICT (e-portfolio, tablet, questionnaire), stimulates development of lateral or critical thinking and thus makes students aware of the fact that the process of learning is a lengthy procedure which they can have influence on and must take responsibility for, not to mention critical distance.

EUfolio project and trial version of using tablets in 8th class, made the authors realise that a systematic approach to critical thinking is a long process and it has to be implemented as early as possible in the development of a child. Consequently it seemed appropriate to use this new teaching approach in 6th class during lessons of Slovene. After discussing different literary genres, students had to create a story with the help of a shared folder. They chose one of the genres (detective, adventure, fantasy, sci-fi story) and wrote the beginning. Then they changed their position, did a short physical activity and continued with the story. They had to read the beginning and write a logical follow-up. After they

finished the stories, they assessed the content and grammar and gave feedback to the writers. Apart from that, they had to reflect on the work in the form of an on-line questionnaire.

It turned out that this kind of work is demanding for students because they are not used to it, however, it benefits the weaker students whose progress improves because they are responsible to their group and have to participate.

Plakati za vse – GLOGSTER

Posters for all – GLOGSTER

Robert Murko • Osnovna šola Videm pri Ptuj

Povzetek: Pri pouku se mnogo učiteljev pri svojem delu srečuje z govornimi nastopi učencev, raznimi predstavitvami ipd. Učenci morajo za ta namen izdelati plakate. Pogosto se še uporabljajo “papirnati plakati”, vendar so le-ti na voljo učencem samo v določeni učilnici in samo določen čas. S pomočjo Glogsterja (<http://www.glogster.com/>) omogočimo učencem izdelavo elektronskih plakatov v okolju, ki je enostavno za uporabo, za izobraževalne namene brezplačno in seveda dostopno vsem učencem, kadarkoli in kjerkoli. Predstavljen je primer uporabe Glogsterja pri pouku naravoslovja. Učenci so na določeno temo izdelali plakate s pomočjo Glogsterja.

Učenci delajo v manjših skupinah (trojkah). Delo si razdelijo glede na svoja močna področja, tako da eden prevzame terensko fotografiranje, drugi pripravi glasbeno podlago in tretji oblikovanje celostne podobe. Pred začetkom skupaj določijo osnovni koncept plakata. Na podlagi smernic, ki so jih določili skupaj, pripravijo vsak svoj del. Poudarek je na sodelovanju, usklajevanju in razvijanju močnih osebnih kompetenc v sklopu skupnega izdelka. Izdelek nastaja on-line, zato ga učenci lahko v vsakem trenutku vidijo kot celoto in tako spreminjajo ter izboljšujejo. Končni izdelek je dostopen vsem učencem in služi kot kakovosten multimedijški učni pripomoček.

Abstract: There are many teachers who face oral presentations by their students and other various presentations in the classroom. Students must make a poster for his or her presentation. There are still a lot of “paper posters” in use but they are available to students only in particular classrooms and for a specific time. By using Glogster (<http://www.glogster.com/>) we allow students to produce electronic posters in an environment that is easy to use, free for educational purposes, and of course, accessible to all students, anytime and anywhere. The paper presents an example of the use of Glogster at Science. Students made posters on different topics by using Glogster.

Students work in small groups (in threes). They divide work according to their strengths, so that one takes field photographing, the other prepares background music and the third designs the whole image. Before starting they determine the basic concept of the poster together. Following the guidelines that they have set together they prepare their parts. The emphasis is on cooperation, coordination and the development of strong personal skills in the context of the total product. The product is made on-line so students can see it at any time as a whole and make changes and improvements. The final product is available to all students and can be used as a high-quality multimedia learning tool.

Kaj je obrnjeno poučevanje?

What is flipped learning?

Janja Androić, Franci Kolar • JVIZ I. osnovna šola Rogaška Slatina

Povzetek: V skladu s hitrim razvojem računalniške tehnologije se pojavljajo novi, sodobnejši načini poučevanja. Eden od teh je model obrnjenega (angl. flipped) poučevanja, pri katerem učenci doma pogledajo vnaprej pripravljen posnetek razlage nove učne snovi, ki ga učitelj pripravi in objavi na spletu, nato pa v razredu snov ob podpori učitelja utrjujejo, poglobljajo in nadgradijo. V prispevku bo predstavljeno, kaj sploh obrnjeno poučevanje je, prednosti takšnega načina dela, kako pripraviti posnetek in kako izvesti obrnjeno učno uro. Praktični del je bil izveden pri pouku angleščine v šestem razredu. Posnetek je bil pripravljen s pomočjo programov CamStudio in Movie Maker in objavljen na spletni strani Youtube. Učenci so si doma ogledali posnetek, nato pa so pri skupinskem delu besedišče utrjevali in poglobljali. Učencem je bil tak način dela zelo všeč, ker je bila domača naloga drugačna, zanimiva in so nestrpno čakali, da si posnetek pogledajo. Delo v razredu je bilo bolj dinamično, učenci pa so bili bolj aktivni, kot so pri izvedbi frontalne ure.

Abstract: Due to constant development of computer technology new models of teaching have appeared in the recent years. One of the models is flipped learning, which combines on-line learning with face-to-face instruction. Learners watch on-line tutorials made by their teachers (or someone else) and prepare for the lesson at home. A teacher spends valuable class time assisting, coaching and guiding their learners in class. This article explains what flipped learning is, its advantages, how to prepare a video tutorial and how to flip your classroom. We flipped English lesson in 6th class. Screencasting software Camstudio and video editing software Movie Maker were used to prepare the tutorial, which was posted on Youtube. Learners watched the video at home and practiced and expanded vocabulary in class. They loved this model because they found this kind of homework different and interesting and they were very anxious to watch the tutorial. Learners were more active during the lesson than during 'traditional' lessons.

Kemija je padla na glavo

Chemistry has fallen on the head

Irena Rutar • Šolski center Nova Gorica

Povzetek: Poučevanje kemije naj bi temeljilo na eksperimentalnem in problemsko raziskovalnem delu. Bistvena značilnost takega poučevanja so aktivnosti, prek katerih dijaki spoznavajo učno vsebino ali rešujejo problem.

Pri pouku kemije sem doslej vnaprej pripravila delovne liste oziroma navodila za delo, v katerih sem navedla nalogo, pripomočke, korake za izvedbo eksperimenta in na koncu še vprašanja za utrditev oziroma ponovitev snovi.

V letošnjem šolskem letu pa sem pri pridobivanju eksperimentalnih veščin uporabila metodo obrnjenega učenja (iz ang. flipped learning). Poudarek je na aktivni vlogi dijaka skozi celoten proces.

Najprej sem internetni naslov za ustrezen videoposnetek objavila v spletni učilnici. Dijaki so si posnetek ogledali doma in napisali korake za izvajanje dejavnosti. Pri uri kemije so dijaki s tabličnimi računalniki in koraki iz domače naloge samostojno napisali navodila za delo. Moja vloga je bila mentorska in usmerjevalna. Dijakom sem med poukom pomagala, sodelovala pri reševanju nalog, jih spodbujala k sodelovanju in medsebojni pomoči.

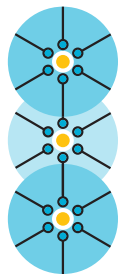
Drugi del eksperimentalnih vaj je potekal v parih. Dijak je v laboratoriju izvedel vajo, drug dijak je izvedbo vaje snemal. Dijaki so si kasneje posnetke sošolcev ogledali in napisali komentar v spletno učilnico.

Abstract: Teaching chemistry should be based on experimental and task-based research work. It essentially comprises content-related activities with which students can solve problems.

During my previous chemistry lessons I always prepared teaching materials in advance and gave students clear instructions including the task description, the devices/equipment needed, the steps for the actual performing of the experiment and finally the questions providing consolidation and revision of the related content.

In this school year I have introduced a new method at acquiring experimental skills – i.e. the method of flipped learning with the help/use of tablet computers. At this type of teaching the emphasis is on the active role of the students throughout the whole learning process.

In the first part of the experimental practice I published the website link for a certain video clip in on-line classroom. The students watched the video at home and recognized the instructional steps for the completion of the task/activity.



During the actual chemistry lesson the students independently wrote down the instructions for work with the help of the tablet computers and the instructional steps from their homework. I mostly offered the students mentoring and guidance. If it was necessary, I helped them during the lesson, cooperated with them and encouraged their mutual collaboration and help.

The second part of the experimental practice was carried out as pair work. One student was accomplishing his task in the laboratory, the other was recording the whole process. They watched each other's videos at home and uploaded the written evaluation/comments of them to the on-line classroom.

Misliti, ali ne misliti – To ni več vprašanje (Razvijanje kritičnega mišljenja pri osnovnošolcih s pomočjo IKT)

To think or not to think – That is not the question

Vesna Gros, Renata Krivec, Petra Mikeln • Osnovna šola Polje Ljubljana

Povzetek: Učitelji si pogosto postavljamo vprašanje, kako učence spodbuditi k razmišljanju in kritični distanci do slišane in videne, ter kako jih naučiti načrtovati, spremljati in vrednotiti lasten napredek in razvoj.

Po mnenju mnogih je prav kritično mišljenje ena izmed veščin, ki jo v 21. stoletju potrebujemo vsi, zato menimo, da jo je smiselno razvijati že v osnovni šoli. O tem, kaj sploh je kritično mišljenje in kako ga razvijati, razmišljamo v projektu Zavoda RS za šolstvo 'EUfolio'. Namen projekta je uvajati sodobne pristope k učenju in poučevanju ter spremljanju in vrednotenju znanj in veščin ob uporabi razvojnega elektronskega listovnika.

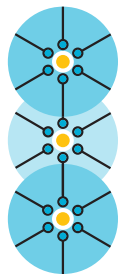
V svojem prispevku bomo predstavile, kako smo učence od šestega do devetega razreda na Osnovni šoli Polje vpeljale v veščino kritičnega mišljenja in spodbudile k razmisleku o tem, kakšni (kritični) misleci so. Ker je kritično mišljenje širok pojem, ki zajema mnoge veščine, smo se osredotočile predvsem na ločevanje med dejstvi in mnenji, dajanje konstruktivne povratne informacije in kritično prijateljevanje ter vrednotenje lastnih in tujih izdelkov. Delo z učenci je potekalo s pomočjo računalniškega okolja Mahara, ki učencem ponuja možnost povezovanja, izmenjave mnenj, forumov, nalaganja povezav, datotek itd. po vzoru družabnih omrežij.

Abstract: As teachers we often ask ourselves how to encourage our students to think critically about what they hear and see and how to teach them to plan, monitor and assess their own progress and development.

According to many, critical thinking is one of the key competences of the 21st century; therefore we believe that it should be fostered already in primary school. What exactly is critical thinking and how it can be developed, is the key topic of the EUfolio project, lead by the National Institute for Education.

The main objective of the project is to incorporate up-to-date approach to teaching, monitoring and assessing knowledge and skills while using an e-portfolio.

This presentation will show how the students of 6th–9th grade at Primary School Polje have been introduced to critical thinking and encouraged to ponder about themselves as critical thinkers. Since critical thinking covers many different competences, we focused primarily on the distinction between facts and



opinions; giving constructive feedback and evaluating own work and the work of others. Lessons have been carried out using the Mahara on-line environment, which offers Moodle-like opportunities of connecting, opinion sharing, forums, uploading of various files, etc.

Otov indeks – Izobraževalna računalniška igra

Oto's index – An educational computer game

Tajda Štrukelj, Maja Šušteršič, Gorazd Vasiljevič, Matej Zapušek, Jože Rugelj •
Univerza v Ljubljani, Pedagoška fakulteta, Oddelek za matematiko in računalništvo

Povzetek: Otov indeks je izobraževalna računalniška igra, ki uči programerski koncept eno in dvodimenzionalnih tabel. Izdelala jo je skupina študentov četrtega letnika Pedagoške fakultete v Ljubljani. Narejena je v okolju eAdventure in je namenjena učencem drugega vzgojno-izobraževalnega obdobja osnovne šole. Z njo učenci krepijo algoritmično razmišljanje, spoznavajo programerski koncept enodimenzionalnih in dvodimenzionalnih polj ter povezujejo vsakodnevne oblike polj s programerskimi. Ker učenci v osnovni šoli nimajo predmeta, ki bi bil namenjen programiranju, se igra lahko uporabi pri računalniškemu opismenjevanju oziroma računalniškem krožku.

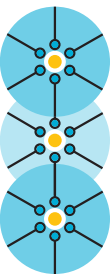
Igra igralcu ponuja primerne izzive ter ga prek povratne informacije motivira, da dosega zastavljene učne cilje. Zasnovana je tako, da je za uporabo enostavna in razumljiva, učenci pa zanjo ne potrebujejo posebnega predznanja. Igra poteka v enoigralskem načinu, vsak igralec pa ima možnost učenja v lastnem tempu.

Rdeča nit igre je skrb za psa Ota, kar predstavlja motivacijo za reševanje nalog. Igralec z opravljenimi nalogami pridobiva dobrine za psa in mu tako viša zadovoljstvo, obenem pa se uči o eno in dvodimenzionalnih tabelah.

Abstract: Oto's index is an educational computer game, based on programming concept of one and two dimensional arrays. It was created by a group of 4th year undergraduate students of Faculty of Education in Ljubljana. It runs on eAdventure game engine and it is designed for students of second triennium in elementary schools.

The game's main goal is to strengthen students' algorithmic thinking, approaching programming concept of one and two dimensional arrays to students and connecting these concepts with real life forms of arrays. Since the elementary school curriculum does not include distinctly programming courses, the game can be used as part of computer literacy course or extra-curricular computer science activities.

Oto's index provides the player with appropriate challenges and motivates him via feedback to achieve set educational goals. Players do not need any special prior knowledge to play and the game itself is designed to be simple and understandable for use. It runs in a single player mode and each player has an option of advancing at his own tempo.



The main content goal is the care for a dog called Oto, who represents the key motivation for solving problems inside the game. With successful completion of tasks, the player collects different goods for his Oto and thus increases Oto's satisfaction. At the same time he or she is subconsciously learning about programming concept of one and two dimensional arrays.

Sezuti maček – Izobraževalna računalniška igra za učenje dveh algoritmov: urejanje z izbiranjem in urejanje z mehurčki

Sezuti maček – An Educational Computer Game for Learning Sorting Algorithms: Selection Sort and Bubble Sort

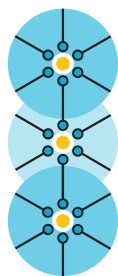
Ida Femc, Sara Ferlin, Klaudija Humar, Sabina Perenič, Matej Zapašek, Jože Rugelj • Univerza v Ljubljani, Pedagoška fakulteta, Oddelek za matematiko in računalništvo

Povzetek: Učenje prek izobraževalnih računalniških iger je vedno bolj prisotno tudi v slovenskem šolskem prostoru. V okviru projekta pri didaktičnem računalniškem predmetu v četrtem letniku študija na Pedagoški fakulteti v Ljubljani smo izdelali izobraževalno računalniško igro za učenje algoritmov za urejanje, natančneje: urejanje z izbiranjem (selection sort) in urejanje z mehurčki (bubble sort). Učenec skozi zabavno zgodbo na intuitiven način spozna delovanje obeh algoritmov, sestavi njuno psevdokodo in ovrednoti pridobljeno znanje. Igra je še posebej uporabna, saj ne zahteva nobenega predznanja na področju programiranja. Tako jo učitelji lahko zlahka vključijo v svoj pedagoški proces brez predhodne razlage snovi.

V članku bomo opisali igro, izdelavo in ozadje njenega razvoja, pri čemer se bomo osredotočili na predstavitev vsebine v učencu smiselnem, razumljivem in motivacijskem učnem okolju.

Abstract: Over the past few years, the presence of game-based learning in Slovenian education has increased significantly. To further such utilization, an educational computer game was made, as a part of project within a computer science didactics class in the 4th year of studies at Faculty of Education, University of Ljubljana, to help pupils learn and understand sorting algorithms, specifically bubble and selection sort. Both algorithms are introduced to pupils through an entertaining story, that later requires a construction of pseudo codes and tests the pupil's newly acquired knowledge. The game doesn't require any prior programming knowledge, which increases its usability and eases the teacher's incorporation of the game into a structured lesson.

This paper presents the production and conceptual development of the game, with a focus on representation of algorithms in a pupil friendly, logical, explanatory and motivational way, as well as on the game itself.



Tri-three blog

Three blog

Alenka Pokeržnik, Janja Petar Ipšek, Branko Bele •
Srednja ekonomska šola Maribor

Povzetek: Medpredmetno povezovanje je na naši šoli stalnica. Že nekaj let poglavje o rastlinstvu povežemo v skupne ure biologije in geografije. V letošnjem letu smo to znanje želeli še poglobiti in aktualizirati. Tako smo v to povezavo vključili še informatiko, kjer bodo dijaki spoznali uporabnost spletnega dnevnika (bloga).

Osnovni namen projekta, v katerem so sodelovali dijaki prvega letnika ekonomske gimnazije, je bil izdelati spletni dnevnik, blog, v katerem dijaki spremljajo sezonske spremembe v rastju v parku v okolici šole. Dijaki so enkrat mesečno, pri uri biologije, obiskali park, kjer so predvsem z uporabo IKT spoznavali različne značilnosti ekosistema. Dijaki so se tekom projekta spoznali z različnimi vrstami IKT. Z Vernierovimi vmesniki so merili temperaturo, določili zemljepisno dolžino in širino. S pomočjo tabličnih računalnikov in interaktivnih ključev za določanje drevesnih vrst so določali drevesa v parku. Izbrano drevo so tudi fotografirali in fotografije vključili v blog. Naučili so se grafično predstaviti svoje rezultate.

Bistveno prednost takšnega načina dela vidimo predvsem v povezavi znanj z različnih področij. Prav tako s takšnim načinom dela osmislimo uporabo IKT tehnologije.

Abstract: Cross-curricular integration is a fixture at our school. For several years, the subject on flora has been associated in total hours of biology and geography. This year, we wanted to enhance and actualize this knowledge. Thus, we have included computer science, where students will learn about the usefulness of on-line journals (blogs).

The primary purpose of the project, which was attended by students of the first grade of high school of economy, was to create a web log, a blog, where students keep track of seasonal changes in vegetation in the park near the school. Students have visited the park once a month during biology lessons and there they learned about the different characteristics of the ecosystem, mainly through the use of ICT. During the project, students have learned about different types of ICT. With Vernier interfaces they measured temperature, determined the longitude and latitude. With the help of tablet computers and interactive charts students determined the species of the trees in the park.

Selected trees were photographed and the photographs included in the blog. They learned how to graphically present their results.

Significant advantage of this kind of work was seen in particular in connecting the knowledge from various fields. Also, such a modus operandi makes the use of ICT technologies viability.

Uporaba OneDrive pri šolskem delu

Using OneDrive at schoolwork

Majda Šubic • Osnovna šola Ivana Groharja Škofja Loka

Povzetek: Računalništvo v oblaku je izraz, ki ga vedno pogosteje zasledimo in uporabljamo. Storitve uporabniku omogoča, da podatke in datoteke prenese na oddaljene strežnike in do njih dostopa, ali jih obdeluje na različnih lokacijah in napravah (računalnikih, tablicah, pametnih telefonih itd.). Zato potrebuje le dostop do interneta in ustrezno programsko opremo.

Delovni dan učencev in zaposlenih je vedno bolj natrpan s številnimi obveznostmi. Časovno in lokacijsko se vedno težje uskladimo. Pri šolskem delu je tim učiteljev uporabljal OneDrive. OneDrive sem izbrala, ker omogoča timsko delo več uporabnikov v istem dokumentu istočasno. Hkrati omogoča tudi oblikovanje dokumentov v programu Word Online. Pri zahtevnejšem oblikovanju (npr. šolski časopis, domače branje, predstavitev) so učenci uporabljali Microsoft Office 2010. Pred uporabo OneDrive smo udeleženi učiteljem in učencem posredovali osnovna navodila. Pri uporabi so učitelji učencem predstavili nalogo, ki so jo učenci naredili v skupnem dokumentu ali skupni mapi – več dokumentov, v katerih so predstavili svoje rešitve zastavljene naloge. Po uporabi OneDrive pri šolskem delu so učitelji in učenci posredovali izkušnje pri uporabi in ideje za nadaljnje delo.

Abstract: Computer science in the cloud is an expression which is increasingly seen and used nowadays. The service enables the user to transfer the data and documents to the distant servers and can access them and work with them at different locations and on different devices (computers, iPads, Smartphones, etc.). To do that, all one needs is the Internet access and suitable software.

A working day of students and teachers is more and more filled with numerous obligations. We can hardly adjust the time to location. A team of teachers used OneDrive at schoolwork. I chose OneDrive because it enables teamwork of many users in the same document at the same time. It also enables the formation of documents in Word Online programme. However, at more demanding tasks, such as the school newspaper, home reading and presentations, the students were using Microsoft Office 2010. Before using OneDrive, the basic instructions were given to the participating teachers and students. The teachers presented the task to the students. The task was done in a joint document or a file – more documents, where they presented their solutions for the given task. After using OneDrive at school work, the teachers and the students gave feedback on using OneDrive at schoolwork and forwarded the experience and some suggestions for further usage.

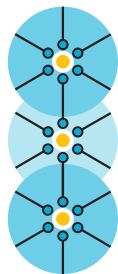
Z IKT do lastnega učnega gradiva

ICT can help us make our own teaching materials

Barbara Hebar • Osnovna šola Dobje

Povzetek: Uporaba IKT učiteljem omogoča, da učencem nove pojme prikažemo bolj konkretno oziroma nazorno, kar ima v prvem vzgojno-izobraževalnem obdobju pomembno vlogo pri njihovih predstavah. Z namenom, da učenci sami, z raziskovanjem, pridobivanjem informacij in uporabo IKT, oblikujejo nazorno učno gradivo, sem z drugošolci izvedla medpredmetni projekt Igre naših babic in dedkov. Učence sem seznanila z oblačno storitvijo Google Drive in jih naučila osnovne uporabe dokumenta v skupni rabi. Vanj so vpisovali opise različnih starih iger in izštevank, ki so jim jih povedali njihovi stari starši, ali pa so jih s pomočjo staršev našli prek spletnega brskalnika. V nadaljevanju so z uporabo kamere na tabličnem računalniku pripravili predstavitev stare igre v obliki posnetka izvajanja te igre. S pomočjo snemalnika zvoka so posneli izštevanko, ki so si jo na podlagi starih izštevank izmislili sami. Nastale posnetke sem naložila na YouTube, kjer smo si jih tudi ogledali. Takšna oblika dela se je izkazala za zelo uspešno. S svojo raznovrstnostjo je motivirala učence različnih učnih stilov, učenci so razvili nove veščine pri uporabi IKT, njihovo znanje pa je bilo pridobljeno prek izkustvenega učenja in timskega dela. Tudi učenci so bili s potekom dela zadovoljni ter ponosni na nastanek njihovega učnega gradiva.

Abstract: The use of ICT enables teachers to present pupils new concepts more specifically and clearly. This is for the pupils of the first triennium and their image very important. In order that the students, through researching, obtaining information and the use of ICT, design the teaching materials by themselves, I made a cross-curricular project Games of our grandmothers and grandfathers. I introduced the pupils the cloud computing Google Drive and taught them about the basic use of the shared documents. They documented descriptions of various old games and counting rhymes, which their grandparents told them about or which were found on the Internet by their parents. Then they used a video camera on a tablet computer and recorded a presentation of an old game. With a voice recorder they recorded a new counting rhyme which was recreated on an old rhyme. The products were put on YouTube, where we could watch them. This kind of work has proven to be very successful. With its diversity it was motivating for pupils of different learning styles, pupils have developed new skills in the use of ICT, and their knowledge was gained through experiential learning and teamwork. Even the pupils were satisfied with the work and they have been proud of their own teaching materials.



E-učni listi ter učenci s posebnimi potrebami

E-work sheet and students with special needs

Boštjan Papež • Osnovna šola Bršljin Novo mesto

Povzetek: Otroci z učnimi težavami, potrebujejo veliko utrjevanja in ponovitev da usvojijo snov. Ravno tako jim je treba razlago večkrat ponoviti. V ta namen sem pripravil veliko papirnatih učnih listov ter izročkov.

Ko je učni list rešen, ga ne moremo ponastaviti in rešiti še enkrat. Nanj lahko damo samo slike. Za ogled vida ali poslušanje je treba uporabiti drugo napravo. Čas in število ogledov pa je določeno in omejeno. Razlago dobi učenec samo od mene; največkrat le enkrat ali dvakrat. Reševanje učnih listov je monotono, zato so učenci slabše motivirani za delo in imajo krajši čas koncentracije.

V veliki meri smo našteje probleme rešili v korist učenca z uporabo tabličnega računalnika, na katerem so učenci reševali e-učni list, ustvarjen v aplikaciji Note Anytime Lite. Tako pripravljen e-učni list preseže uporabnost klasičnega. Omogoča dodajanje povezave do prej pripravljene razlage, ki si jo lahko učenec po svojih potrebah ogleda. Prek e-učnega lista lahko učenec dostopa do spletnih izobraževalnih iger ter avdio in video materiala. Naloge za utrjevanje pa lahko naredimo interaktivne, saj lahko učenec na različne načine manipulira z elementi na ekranu. Na ta način smo proces utrjevanja poigrali, s tem pa se podaljšata otrokova pozornost in motivacija za delo.

Abstract: Children with learning disabilities require a lot of consolidation and repetition to master the material, and they also need the subject is explained several times. To this end, I have prepared a lot of paper worksheets and handouts.

When the worksheet is completed, it can not be reset and used again. You can only add pictures to it. To view a video or listening it is necessary to use another device. Time and number of viewings is limited. Working with worksheets is monotonous so students are less motivated to work and have a shorter concentration span.

Listed problems are to a large extent solved in favor of the student using a tablet computer in which the students solved the e-learning sheet, created in an application Note Anytime Lite. So prepared worksheet exceeds the usefulness of the classic work sheet. It's possible to make connections to previously prepared explanation, which the student can view according to their needs. Via the e-work sheet learners can access on-line educational games, audio and video material. Tasks can be made interactive because the student is able to manipulate elements on the screen. In this way, we gamified the process of repetition and prolonged child's attention and motivation to work.

Učinek refleksije učenca na vrednotenje skupinskega sodelovalnega dela ena na ena

The Effect of Student Reflection on Assessing Collaborative Work One-to-one

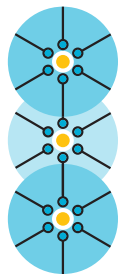
Jerica Glavan • Srednja vzgojiteljska šola in gimnazija Ljubljana

Povzetek: V primerjavi z individualnim delom, skupinski sodelovalni pouk učencem omogoča, da obravnavano snov spoznajo globlje, hkrati pa razvijajo še sodelovalne veščine. Zato lahko trdimo, da se učimo na avtentičen način in da je taka oblika pouka v sodobni šoli priporočljiva, še posebej v okviru pouka ena na ena, ki nam omogoča hitrejši dostop do podatkov in spodbuja učenje z uporabo številnih IKT orodij.

Vrednotenje sodelovalnega dela ostaja velik izziv, saj so kriteriji vezani na konkretne dejavnosti, ki vodijo do končnega rezultata učenja. Če imamo ustrezno zastavljene cilje, je končni izdelek preprosto ovrednotiti, kar je sestavni del tradicionalnega pouka. S težavami pa se soočimo, ko bi radi ocenili tudi proces, ki je privedel do tja. Ko imamo v razredu šest skupin, kako naj hkrati spremljamo delo vseh? Ta problem sem poskušala rešiti s pomočjo refleksije učenca. Ker je organizacija na šoli precej toga, sem se odločila, da izkoristim prednosti pouka ena na ena, in nadomestim živi razgovor z vsakim učencem posebej tako, da s tablico učenci posnamejo svojo refleksijo v avdio obliki. Zato je namen mojega prispevka prikazati, kako mi je v konkretnem primeru refleksija pomagala pri vrednotenju sodelovalnih, komunikacijskih in analitično-kognitivnih veščin in kje je še prostor za izboljšave.

Abstract: Compared to individual work, collaborative learning helps students not only to reach a broader understanding of the topic, but also to develop collaborative skills. Collaborative work promotes authentic learning, thus it should be widely practised in modern schools, particularly in one-to-one learning, which enables a quick access to information and encourages learning by using various ICT tools.

Assessing collaborative work remains a challenge for teachers since rubrics have to be designed according to specific activities in the classroom. When our teaching goals are set properly, the outcome of learning can easily be assessed. However, the problem arises when we decide to assess the process as well. When there are six groups working in one classroom, how are we supposed to monitor each individual's work? In order to solve this problem, I have chosen to consider each student's own reflection of their work. To overcome the school's



organisational barriers I used the advantage of one-to-one learning: instead of having a discussion with each student in person, students had to make an audio recording of their reflections, using their tablets. What is presented is a specific example where it can be seen in what way each student's reflection has contributed to assessing their collaboration, communication and analytical-cognitive skills, and where there is still room for improvement.

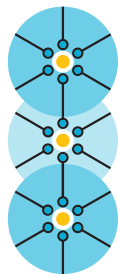
Skrivnostni Surini

Mysterious Surini

Lucija Žnidarič, Aleša Žandar, Tadej Bogataj, Matej Zapušek, Jože Rugelj •
Univerza v Ljubljani, Pedagoška fakulteta, oddelek za matematiko in računalništvo

Povzetek: Skrivnostni Surini je izobraževalna računalniška igra, namenjena učencem in dijakom, ki se v osnovnih in srednjih šolah srečajo z iskalnimi algoritmi. Igralca popelje v gusarski svet pustolovščin, v katerem skozi izbrane aktivnosti spozna in usvoji delovanje Dijkstrovega algoritma. Algoritem reši problem iskanja najcenejših poti v grafu, v računalniškem kontekstu pa je za učence in dijake smiselno kot algoritem, ki nastopa pri usmerjanju na omrežnem sloju TCP/IP modela. Igra je postavljena v učencem prilagojeno učno okolje, v katerem so učni cilji zakriti in je v ospredje postavljeno zabavno reševanje problemov. Igralec nastopa v vlogi prijaznega pirata, ki poglavarju otoka Fantan pomaga rešiti hči Arabelo, ki jo je ugrabilo sovražno ljudstvo Tantami. To mu lahko uspe le tako, da se prebije skozi štiri sovražnikove otoke. Na teh otokih mora poiskati najmanj nevarne poti do sovražnikovih hišk, saj s tem zbira cekine, ki jih v zadnji fazi igre potrebuje, da doseže cilj. Otoki sovražnikov v igri predstavljajo posamezne učne etape, ki jih v celoten učni proces povezuje zemljevid otočja. Ta igralcu omogoča pregled nad napredovanjem v igri, ki je pogojeno z usvajanjem učnih ciljev. Skrivnostni Surini je nova priložnost za učitelje in profesorje, da v svoje pedagoško delo vključijo, tako z didaktičnega kot tudi s tehničnega vidika, posebej za njih zasnovano eno izmed izobraževalnih računalniških iger, ki so se v svetu pokazale kot dobra praksa v najrazličnejših okoljih.

Abstract: Mysterious Surini is an educational computer game created for children attending both elementary schools as well as high schools where they may find themselves learning the basics of search algorithms. The game gives the player a piracy-themed adventure, where he learns and internalizes the workings of the Dijkstra's algorithm through well-selected activities. Dijkstra's algorithm is used for finding the cheapest path in a given graph. The algorithm is used in various fields of science, for example computer science, where it is used for routing packages of information that travel through the Internet, making it useful for children to know about it. The design of the game is adjusted to the school environment, making its learning objectives hidden and offering a fun gaming experience. The player embarks the game as a friendly pirate, where he helps the governor of the island Fantan to find his missing daughter Arabel, who was kidnapped by a hostile tribe, the Tantams. He can only succeed if he successfully finds his way through four islands. To do that, he must find



the least dangerous paths to all hostile tribe houses on each of the four islands. In this way he collects coins, making it possible to complete the game. All the four islands together represent a complete learning process of the above mentioned algorithm, whereas an individual island is used for the representation of a single learning stage. Mysterious Surini is a new opportunity for all teachers to embed a learning game in their curriculum, making it more interesting and diverse for the children as well as simplifying the process of learning while getting better results than ever before.

Tangram

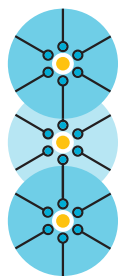
Tangram

Lidija Jug • Osnovna šola Sladki Vrh

Povzetek: V prispevku je predstavljena raziskovalna aktivnost, pri kateri učenci tudi s pomočjo tabličnega računalnika raziskujejo geometrijske oblike s sestavljanjem delov tangrama. Tangram je kitajska sestavljanica, stara nekaj stoletij, ki vsebuje sedem delov, ki so osnovni geometrijski liki. Z njimi sestavljamo različne figure, pri čemer moramo uporabiti vseh sedem kosov, ki se ne smejo prekrivati. Pri pouku izbirnega predmeta matematična delavnica obravnavamo matematične miselne igre. Uvod v raziskovanje je bila izdelava lastnega tangrama s prepogibanjem lista papirja po navodilih za izdelavo. Kot izziv pa smo si zadali cilj, da želimo iz delov sestavljanke vedno sestaviti trikotnik, kvadrat, pravokotnik, paralelogram in trapez. Postavili smo tudi novo pravilo sestavljanja, kjer ni treba uporabiti vseh sedem delov. Naloge smo se lotili sistematično tako, da smo začeli z enim delom sestavljanke, nato nadaljevali z dvema deloma sestavljanke, tremi deli itd. ter ugotavljali, katere, zgoraj naštetje like lahko sestavimo. Poudarek je bil na raziskovanju: iskanju rešitev, s kolikimi deli, katere like sestavimo. Pri delu so učenci uporabljali tablični računalnik, kjer so s pomočjo računalniške aplikacije Tangram (predhodno nameščena na tabličnem računalniku) iskali rešitve. Za učence je bilo delo zanimivo, nekateri so se prvič srečali z igro tangram, ki omogoča veliko možnosti raziskovanja.

Uporaba IKT opreme je pomemben dejavnik, ki pripomore k izboljšanju kakovosti pouka, saj je za učitelja tudi orodje, ki tako učitelju kakor tudi učencem omogoča boljše, zanimivejše, hitrejše in v nekaterih primerih nazornejše delo v razredu.

Abstract: The article presents the research activity in which the students also use the tablet PC to explore geometric shapes by assembling parts of the tangram. Tangram is a centuries old Chinese puzzle, which consists of seven parts, which are basic geometric shapes. We put together various figures – we must use all seven pieces, which must not overlap. We deal with mathematical logic games at an optional subject called mathematical workshop. The introduction to the research was to make their own tangram by folding a sheet of paper, following the instructions. The challenge for us was to compose a triangle, a square, a rectangle, a parallelogram and a trapezium from all parts of the puzzle. We also set up a new rule for constructing, where it was not necessary to use all seven parts. We proceeded with the task systematically: we started with one part of the puzzle, then we continued with



two parts of the puzzle, then three parts, etc. and we were finding out what shapes, listed above, we can make. The emphasis was on the research: from how many parts certain shape is made. The students were using the tablet PC, where they were trying to find the solutions with the help of computer application Tangram (preinstalled on the tablet PC). Students found this kind of work interesting, some of them even met the game tangram, which allows many possibilities to explore, for the first time.

The use of ICT equipment is an important factor that contributes to improvement of the quality of teaching. For the teacher and for students it represents a better, more interesting, faster, and in some cases, more concrete work in the classroom.

Preverjanje znanja s pomočjo mobilnih naprav

Assessment with mobile devices

Dragica B. Banović •

Šolski center Novo mesto, Srednja elektro šola in tehniška gimnazija

Povzetek: Razvoj sodobne informacijsko-komunikacijske tehnologije je v šolski prostor vnesel tako nove metode izobraževanja kot sodobnejše metode preverjanja in ocenjevanja znanja. Tradicionalne učbenike in zelene table so zamenjali e-, i- ali d-učbeniki, uporabni na mobilnih napravah ter interaktivne table. Dijaki spremembe z navdušenjem sprejemajo. Edina slabost teh orodij je ta, da si morajo dijaki zagotoviti ustrezno mobilno napravo.

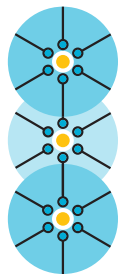
Učitelji smo z informacijsko-komunikacijsko tehnologijo pridobili sredstvo za motivacijo dijakov, hkrati pa tudi zahtevo po spoprijemanju z vedno novimi izzivi. Tak izziv je tudi preverjanje znanja s pomočjo mobilnih naprav.

V preteklem letu sem pričela z uporabo iPad-a pri pouku kemije. Ta mi je omogočal "premagovati prepad med konkretnimi in abstraktnimi predstavitvami kemijskih pojmov in procesov" (Vrtačnik, 1999). V pouk sem pričela vnašati aktivnosti, pri katerih so dijaki uporabljali lastne tablične računalnike ali mobilne telefone. Te sem vključevala predvsem v sprotno preverjanje znanja, pri čemer sem si pomagala s kvizi v spletnih učilnicah Moodle, ki sem jih dopolnjevala z različnimi on-line anketami (predvsem z uporabo Google uporabniškega računa). Spoznavali smo spletno aplikacijo Socrative, uporabljali glasovalni sistem Kliker.

V letošnjem šolskem letu smo vključeni v pilotni projekt Uvajanje in uporaba e-vsebin in e-storitev, ki ga vodi Zavod RS za šolstvo. Oddelek dijakov drugega letnika je bil opremljen z Asus tabličnimi računalniki, kar je posamezniku zagotovilo delo na lastni napravi, učiteljem pa omogočilo še aktivnejše oblike pouka kot tudi problemsko zasnovan pouk.

Abstract: The development of modern information and communication technologies in the educational space introduced new methods of education as well as more modern methods of testing and assessment. Traditional textbooks and blackboards have been replaced by e-, i- or d-textbooks for use on mobile devices and interactive whiteboards. Students enthusiastically accepted the change. The only disadvantage of these tools is that students must have an appropriate mobile device.

With ICT teachers acquired means to motivate students, as well as a request to confront new challenges. Such a challenge is assessing knowledge with the help of mobile devices.



Last year I started using iPad in chemistry class. This enabled me to “overcome the gap between concrete and abstract chemical concepts and processes” (Vrtačnik, 1999). I introduced lessons with activities in which students use their own tablet computers or mobile phones. I included this in regular assessment, where I used quizzes in Moodle, which I supplemented with a variety of on-line surveys (mainly using the Google account). We learned about web application Socrative and used the Kliker voting system.

This school year we are involved in a pilot project Use of e-content and e-services, managed by the National Education Institute. A class of students of the second year was equipped with the Asus tablet computers, which provide individual work on their own devices, and which allows teachers more active forms of teaching as well as problem-based learning.

Avtentični pouk in terensko delo inovativnega oddelka v Avstriji, na Poljskem in v Londonu na podlagi koncepta inovativne pedagogike ena na ena

Authentic classes and fieldwork of the “innovative class” in Austria, Poland and London, based on the concepts of the innovative pedagogy one-to-one

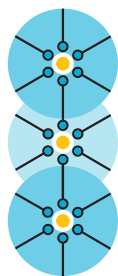
Bernardka Radej •

Zavod Antona Martina Slomška, Škofijska gimnazija Antona Martina Slomška

Povzetek: Sestavni del gimnazijskega programa so tudi različne ekskurzije. Ob uvajanju inovativnega pristopa k učenju in poučevanju z uporabo IKT, smo se odločili, da v inovativnih oddelkih spremenimo tudi koncept terenskega dela, ki postaja avtentični pouk izven zidov učilnic in prinaša aktivno delo dijakov že v fazi načrtovanja (poti, stroškov, ogledov in vsebin), izvajanje vsebin na terenu, foto in video dokumentiranje, uporaba obstoječih e-vsebin (agencije, muzeji, galerije, javna transportna sredstva) z mobilnimi napravami, ki jih imajo s seboj na terenu, evalviranje in zapis izbranih vsebinskih področij (večja izbirnost) ter izvajanje evalvacijskih vprašalnikov po vrnitvi za spremljanje zadovoljstva in z namenom izboljševanja vsebin in organiziranja prihodnjega terenskega dela.

Po dvehletnih izkušnjah ugotavljamo, da dijaki aktivno sodelujejo v vseh fazah avtentičnega pouka, razvijajo svojo kreativnost in ustvarjalnost, so izredno vedoželjni in uspešno razvijajo tudi komunikacijske sposobnosti v tujem jeziku. Opazen je napredek v razvoju kritičnega mišljenja in precej večja spretnost pri uporabi različnih naprav. V proces so ves čas aktivno vključeni tudi starši dijakov, ki niso le opazovalci, ampak so se v času ekskurzije zelo aktivno vključili v komunikacijo prek družbenega omrežja, v času pred odhodom pa smo z njimi pripravili (letos prvič) videokonferenčni roditeljski sestanek.

Abstract: Excursions are part of the secondary school education. When incorporating innovative approaches of learning and teaching with ICT into our “innovative classes”, we decided to alter the concepts of fieldwork which is becoming authentic and has moved out from the classrooms, and involves active students participation in the planning phase (expenses, route, content,



sightseeing), photo and video coverage, the use of e-guides (agencies, museums, galleries, public transport). Students also use different devices for evaluation and documentation of the chosen subject area (a wider selection of choices possible) and to complete survey questionnaires in order to improve future work.

After two years of experience we have noticed the students are actively involved in all phases of the authentic classes, develop their creativity and communicative skills in a foreign language. They have also improved critical thinking and managing electronic devices. Parents are actively involved in the process and communicate with us through social networking sites during the excursions. This year before the excursion to London we organized a parents – teacher meeting conducted as a video conference.

Z računalniško-izobraževalno igro po sledih Atlantide ter po osnovnih poteh programiranja funkcij in procedur

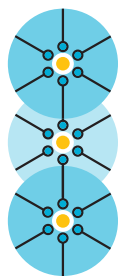
With a computer-didactical game on the track of Atlantis and on the basic path of programing functions and procedures

Katja Skubic, Davor Zupan, Sara Droždek, Matej Zapušek, Jože Rugelj •
Univerza v Ljubljani, Pedagoška fakulteta, Oddelek za matematiko in računalništvo

Povzetek: Izdelave igre smo se lotili z namenom, da učencem, ki se učijo programiranja in algoritmičnega razmišljanja, čim bolj zanimivo in zabavno predstavimo temo: funkcije in procedure. Z vključevanjem humorja in motivacijskih elementov smo skušali doseči, da se bodo učenci veselili igranja igre, s tem pa pridobili osnovno znanje o funkcijah in procedurah. Tema je za učence, ki se z njo prvič spoznavajo, precej zahtevna, zato smo z namenom, da bi olajšali prenos znanja, vključili veliko zanimivih aktivnosti, ki smo jih predstavili v privlačni zgodbi. Igro smo izdelali v okviru predmeta Z informacijsko-komunikacijsko tehnologijo podprta učna gradiva na Pedagoški fakulteti v Ljubljani, smer matematika in računalništvo, kot projektno skupinsko delo. Članek opisuje podroben potek izdelave igre, scenarij, vključene aktivnosti in učne cilje, ki smo jih želeli naučiti.

Končni izdelek je primer, kako izdelati didaktično ustrezno, teoretično zasnovano igro, ki učne cilje spretno zakrije v kontekst igre in tako omogoči, da se otrok ob igranju nezavedno uči pomembnih konceptov iz programiranja. Delo še ni končano, saj bomo izdelek testirali z beta testiranjem, dodatna testiranja bodo opravljena še v okviru prakse v osnovnih šolah. Po končanih testiranjih, bomo na podlagi ugotovitev igro še izboljšali.

Abstract: We started making this game in order to present the subject of functions and procedures in an interesting and fun way to pupils, who are learning to program and develop their algorithmic thinking. Adding humor and motivational elements to the game, we tried to achieve that pupils will enjoy playing the game, and with that gain knowledge about creating algorithms. The topic is quite difficult, that is why we decided to include a lot of interesting activities, which we present in an appealing storyline, to ensure the transfer of knowledge. The game was developed during the subject With information and communications technology supported learning materials on the Faculty of



education in Ljubljana, department of Mathematics and Computer science, as a group project. The article describes how we made the game, the script, included activities and learning goals, which we want to teach with this game. The final product is an example, how to create a didactically appropriate, theoretically based game, which hides the learning goals in the games context and allows pupils, while playing the game, unknowingly learn important concepts about programming. The game still has to undergo beta testing, and also needs to be tested in primary schools. After the testings are done, we will, based on the results, improve the game, where improvements are needed.

Vse je lahko zgodba

Everything could be a story

Boris Volarič • Osnovna šola bratov Polančičev Maribor

Povzetek: Edgar ni spletna storitev. Edgar ni družbeni medij. Edgar je pripovedovalec zgodb. Kot je preprosta definicija, tako preprosta je uporaba. Še osnovnošolec jo brez pomoči učitelja osvoji prej kot v eni šolski uri. V prispevku bomo pokazali, da so lahko tako preproste prav vse stvari okrog nas. Da lahko iz poplave faktografskih informacij, večpredstavnih in interaktivnih virov, vedno izluščimo bistvo in ga predstavimo v sedmih poglavjih zgodbe. Pokazali bomo, kako lahko z razmišljanjem “out of the box” vsako še tako strokovno temo spremenimo v zgodbo, ki je učenci ne bodo nikoli pozabili. In kako te veščine naučimo tudi učence. In se pri tem vsi skupaj nadvse zabavamo. Legendarni ameriški pripovedovalec zgodb Edgar Allan Poe se je reinkarniral v spletni naslov **edgartells.me**, kjer se skriva projekt “Swiftly, and with style”, ki je praktičen primer, kako lahko tudi tako visoko strokovno temo, kot so stilne predloge spletnih strani (CSS), predstavimo povsem poljudno. In da to znajo tudi devetošolci. Kdo bi si mislil, da lahko Edgar združi pripovedovanje zgodb, računalništvo in angleščino? Nekateri to imenujejo tudi medpredmetno povezovanje.

Abstract: Edgar is not a web service. Edgar is not social media. Edgar is a storyteller. Usage is as simple as his definition. Primary school pupils are able to get familiar with him within less than a lesson even without the help of the teacher. In this paper we will show that anything can be as simple as that. Being able to always extract the essence from the floods of factual information, multimedia and interactive resources and then present it in seven chapters of the story. We will show how “out of the box” thinking can transform every, even the most professional topic into a story, which the students will never forget, and how we can transfer these skills to our pupils while having lots of fun. Legendary American storyteller Edgar Allan Poe was reincarnated as a web address **edgartells.me** which hides the project “Swiftly, and with style.” It is a practical example how even highly specialized topics, such as Cascading Style sheets (CSS), can be presented quite popularly. And that even nine graders can do it. Who would have thought that Edgar can combine storytelling, computer science and English? Some call it a cross-curricular integration.

Razvijanje jezikovnih spretnosti skozi medpredmetne povezave – Primer spletnega dnevnika pri pouku angleščine v devetem razredu osnovne šole

Development of language skills through cross-curricular learning – An example of a blog in Year 9 of Slovenian elementary school

Mojca Filipčič • Osnovna šola Vincenzo e Diego de Castro Piran

Povzetek: Prispevek obravnava uporabo kombiniranega učenja s pomočjo spletnega dnevnika (bloga) v devetem razredu osnovne šole pri angleščini v kontekstu medpredmetnega povezovanja. Skozi analizo različnih aktivnosti na blogu prispevek prikaže praktičen vidik obravnave medpredmetnih vsebin v tujem jeziku z avtentičnimi besedili, v pisni ali avdio-video obliki.

Abstract: The paper examines the use of blended learning in English teaching blog in the ninth grade of elementary school in connection to cross-curricular links. Through the analysis of various activities on the blog the paper gives a hands-on approach when dealing with cross-curricular content in authentic English texts and avdio-visual content.

4.

Sejem Daj-Dam • Give-and-Take Fair

Sejem Daj-Dam

Give-and-Take Fair

Sejem Daj-Dam je letošnja SIRiktova nova oblika predstavitve strokovnih prispevkov v drugačni obliki izmenjave izkušenj in znanja udeležencev konference.

Udeleženci – predstavljalci bodo z žrebom izbrani v skupinice po tri, kjer si bodo v okviru omizja med seboj izmenjali svoje izkušnje. Vsak predstavljalec na Sejmu Daj-Dam se bo udeležil treh omizij, vsakič v drugačni sestavi. Tako bo imel možnost svojo idejo in izkušnjo predstaviti trikrat in prisluhniti šestim predstavitev.

Vsako omizje bo v eni sestavi imelo za predstavitev in pogovor na voljo 30 minut časa: 3 x 5 minut za predstavitve strokovnih prispevkov, nato pa še 15 minut časa za skupen pogovor med člani omizja. V pogovor se bodo lahko vključili tudi opazovalci oziroma poslušalci. Po 30 minutah bodo predstavljalci zamenjali prostore, tako da bodo nastala nova omizja. Ključ za menjavo mest bodo izvedeli od moderatorjev.

Opazovalci oziroma poslušalci se bodo sprehajali med omizji, prisluhnili predstavitev in pogovorom med člani omizja in se v pogovore tudi vključevali.

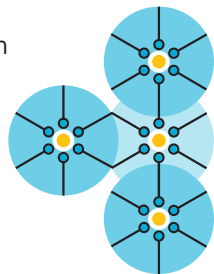
Pri eni od prostih miz bo dana tudi možnost predstavljanja vsebin tistih, ki niso vnaprej prijavili svojega prispevka. Tam bo na voljo tudi kotiček za oddajo odziva obiskovalcev po končanih omizjih.

Na Sejmu Daj-Dam bomo sledili ideji, da ima vsak udeleženelec možnost prispevati svojo izkušnjo in se hkrati učiti od drugih.

This year SIRikt presents a new form of presentation of scientific articles – the Give-and-Take Fair – as a different format of an exchange of experience and knowledge of the conference's participants.

The lot will select the participants presenters to the clusters of three, where they will share their experiences between them. Each presenter at the Give-and-Take Fair will attend three round tables, each time in a different composition. In this way he will have the opportunity to present his idea and experience three times and listen to six other presentations.

Each table in one composition will have 30 minutes for its presentation and discussion: 3 x 5 minutes for the presentation of scientific articles, and then another 15 minutes for a joint discussion between members of the table. They will be able to interact in discussion as observers or as listeners.



After 30 minutes the presenters will replace places to create a new table. The key for changing their places will be obtained by moderators.

Observers or listeners will walk around round tables, listen to presentations and to the conversations between members of the table, and they will be also able to involve in them.

At one of the vacant tables will be given the opportunity for presenting the contents of those who didn't pre-register their articles. There will also be a corner for the submission of the response of visitors after the end of round tables.

At the Give-and-Take Fair we will follow the idea that each participant has the opportunity to contribute their experience and also learn from others.

Šolska knjižnica & spletni dnevnik – Korak k medijski pismenosti

School library & blog – Step toward medial literacy

Nevenka Mandelj • Osnovna šola Litija
Urša Bajda • Osnovna šola Tončke Čeč Trbovlje
in JZ Osnovna šola Marjana Nemca Radeče

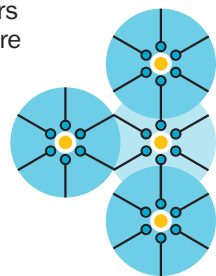
Povzetek: V tendenci k digitalni pismenosti ne moremo mimo medijske pismenosti aktivnega učenca. S pomočjo IKT in sodobne mobilne naprave lahko učenci vstopajo v šolsko knjižnico v svoji domači postelji, na počitnicah, skratka kjerkoli prek njenega bloga – spletnega dnevnika. Z ustrezno načrtovanim spletnim dnevnikom šolske knjižnice poteka poučevanje izven zidov in knjižničnih polic. Kompetenca medijske pismenosti se kot vse kompetence usvaja postopno, dokler učenec ne razvije zmožnosti kritičnega vrednotenja različnih medijskih vsebin. S pomočjo spletnega dnevnika šolske knjižnice je mogoče učencem približati IKT kot učno okolje, ki presega prostor igrarij in medvrstniških pogovorov (večinoma enozložnic). Avtorici v prispevku predstavljata dva različna spletna dnevnika šolskih knjižnic, ki vsak na svoj način poglobljata IKT znanja učencev ter omogočata medijski pismenosti spodbudno okolje.

Na primeru spletnega dnevnika šolske knjižnice Osnovne šole Litija je podrobneje predstavljena interesna dejavnost mladih knjižničarjev, ki se aktivno vključujejo v različne nacionalne in mednarodne projekte, med drugim pa so oblikovali v Sloveniji inovativni t.i. napovednik knjig, v tujini prepoznaven kot Book Trailer.

V šolski knjižnici Osnovne šole Marjana Nemca Radeče pa učence med drugim družijo tudi interesna dejavnost debatni klub. Ker se večkrat letno udeležujejo debatnih turnirjev, se nanje pripravljajo tako, da raziskujejo najrazličnejše informacijske vire – medije. S pomočjo spletnega dnevnika šolske knjižnice o svojem interesu, dosežkih in dilemah učenci obveščajo tudi širšo skupnost.

S prispevkom želita avtorici poudariti pomen šolske knjižnice v digitalni dobi ter opozoriti na že davno presežen fizični prostor šolske knjižnice, ki lahko postane tudi uspešno virtualno učno okolje oziroma orodje poučevanja.

Abstract: In tendency to digital literacy we cannot ignore the media literacy of an active learner. With the power of ICT and modern mobile devices, learners can enter into the school library from their home beds, on holidays, anywhere through its blog – an on-line diary. With a properly planned school library blog, teaching can be carried out outside school walls and library shelves. Media literacy competency, like all competencies, adopts



gradually, until a learner develops an ability of critical evaluation of various media contents. With the assistance of school library blog, we can approach learners the ICT as a learning environment, that exceeds the space of games and peer conversations (mostly monosyllable words).

In contribution the authors represent two different school library blogs, which each on their own way, deepen students' ICT skills, and enable media literacy a supportive environment.

Litija elementary school library blog fully introduces an extracurricular activity of young librarians, who actively engage in various national and international projects. Among other things, they created an innovative book trailer, abroad recognized as The Book Trailer.

In Radeče elementary school pupils are, among other things, joined in a debate club. Since pupils attend several debate tournaments a year, they prepare to them by exploring a wide variety of informational sources – the media. Through their school library blog, pupils also inform a wider community about their interests, achievements and dilemmas.

With this contribution the authors want to emphasize the importance of school libraries in the digital era, and draw attention to a long ago exceeded physical space of the school library, which could become a successful virtual learning environment – respectively a teaching tool.

Učenje na daljavo

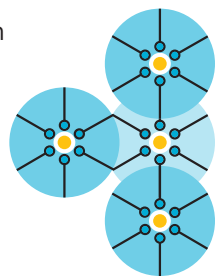
Distance learning

Andrej Oberwalder Zupanc • Srednja šola Domžale

Povzetek: Pri pouku predmeta Prostorsko modeliranje v programu strojni tehnik dijaki delajo samostojne izdelke v 3D modelirniku po navodilih učitelja in ustrezni literaturi. Vsak postopek učitelj pokaže tako, da dijaki lahko sledijo. Problem pa se pojavi za dijake, ki so bili iz različnih razlogov odsotni pri pouku. Dijak, ki ga ni pri pouku, teh postopkov ne vidi, doma pa si samo z literaturo težje pomaga – predvsem zato porabi bistveno več časa, zato sem za take dijake pripravil ekranske posnetke dela.

Programske rešitve za to opravilo obstajajo že dolgo, vendar sem se šele v tem šolskem letu spomnil, da bi bili zelo koristni. Tudi raznovrstnih prikazov na internetu je veliko, vendar dijak težko najde ravno tisto, kar je pri pouku zamudil. Za lažjo dostopnost do teh vsebin sem uporabil kar storitev Google Drive. Dijakom dodelim pravico do dostopa do arhiva, tako da si lahko doma ogledajo pripravljene prikaze dela. Na ta način lahko opravijo vajo, ki so jo izpustili, in naslednjič nadaljujejo delo z ostalimi dijaki. Opisan način dela je izboljšal učinkovitost pouka, saj mi ni treba posebej razlagati postopkov dijakom, ki so bili odsotni.

Abstract: In the course Spatial modelling in the mechanical technician programme students design products in 3D according to the instructions given by the teacher and relevant literature. Each teacher shows the process so that students can follow. The problem arises for students who were absent for various reasons. A student who is not present in the classroom, cannot see these procedures at home, and it is also a problem for them to use the literature appropriately – they spend significantly more time, so I prepared screenshots for these students. Software solutions for this task have existed for a long time, but it was only in this school year that it came to my mind that they could be very useful. There is also a variety of presentations on the Internet, but the students find it difficult to precisely find what they need. In order to facilitate access to such content I used Google Drive. Students are granted the right to access the archive, so they can watch the presentations at home. This way they can carry out the task, which they couldn't before, and then continue to work with other students in the following lessons. The way of work described improve the effectiveness of teaching and learning, because I do not need to explain certain procedures to students who were absent.



Spletno orodje Socrative in poučevanje s tabličnimi računalniki

On-line tool Socrative and teaching with tablet PCs

Mateja Tovornik • Osnovna šola Dobje

Povzetek: Tablični računalniki in pametni telefoni nam omogočajo široko paleto možnosti uporabe raznovrstnih aplikacij in orodij. Eno izmed takih orodij je tudi program Socrative (Socrative – Student Response System). Socrative je spletno orodje, ki s pomočjo prenosnika, tablice ali pametnega telefona izpelje hitro anonimno ali poimensko preverjanje znanja z vnaprej pripravljenim vprašalnikom. V kolikor uporabimo poimensko odzivanje, lahko lažje spremljamo posameznika in njegov napredek. Na podlagi hitre grafične in številčne povratne informacije glede predznanja, učence lažje umestimo v ustrezne skupine za delo v osrednjem delu pouka. Spletno orodje Socrative je preprosto za uporabo, učenci vstopajo vanj s številko sobe, kar odpravlja vse težave s pozabljenimi gesli. Za delo potrebujemo zgolj dostop do omrežja in ustrezno napravo.

Abstract: Tablets and smartphones offer a wide range of uses of different applications and tools. One of such tools is program Socrative (Socrative – Student Response System). Socrative is an on-line tool using laptop, tablet or smartphone to carry out quick, anonymous or by-name examination using predefined quiz. Using by-name examination allows us to monitor an individual and his progress more easily. Fast graphical and numerical feedback information about student's pre-knowledge allows us to rank students in appropriate groups for work in main class stream. On-line tool Socrative is easy to use. Students enter with room number, which eliminates any problems with forgotten passwords. To work with, we only need network access and appropriate device.

Kurikularne povezave v pedagogiki ena na ena omogočajo kompetence 21. stoletja

Curricular connections in pedagogy one-to-one in enabling digital competences of 21st century

Iztok Škof • Osnovna šola Toma Brejca Kamnik

Povzetek: Pri svojih učencih želim spodbuditi razvijanje kritičnega in ustvarjalnega mišljenja ter zmožnosti reševanja problemov in odločanja. Pomagam jim izgrajevati kompetence 21. stoletja in pridobivati znanje za življenje.

Želim individualizirati pouk, se prilagoditi posameznemu učencu in njegovim sposobnostim učenja. Učni načrt hočem preoblikovati tako, da se z njim približam učencu in njegovi radovednosti. Učence poskušam naučiti razmišljati, iskati odgovore na vprašanja, si postavljati prava vprašanja in dobiti odgovore nanje.

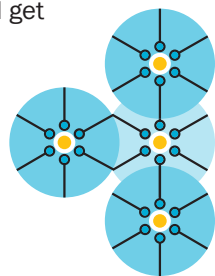
Kurikularne povezave, kot ugotavljajo različni avtorji (Škerjanc, Rutar Ilc), pomenijo povezovanje s pomočjo vsebin, dejavnosti, didaktičnih metod in postopkov (npr. aktivno učenje, projektni pristop), uporabo učnih orodij (npr. IKT), miselnih postopkov, veščin in navad (npr. razvijanje kritičnega mišljenja, ustvarjalnega mišljenja, zmožnosti reševanja problemov in odločanja, tako imenovanih veščin za 21. stoletje – 21st century skills).

Zato sem se povezal s predmetom geografija, pri katerem so učenci obravnavali Južno in Jugozahodno Azijo. Vsak učenec je dobil svojo učno enoto in smernice za delo iz učnega načrta. Najprej je naredil osnutek svojega izdelka, nato predstavitev za interaktivno tablo. Svoje delo je predstavil sošolcem. Pripravil je tudi dejavnosti za sošolce in s tem preveril, ali so razumeli njegovo predstavitev.

Abstract: Our priority is to encourage students to develop critical and creative thinking and problem-solving abilities and decision-making. We help them to build up competencies of 21st century and to acquire skills for life.

To individualize instructions and learning for each student and his learning abilities was our primary goal. We would like to transform the curriculum so that it will be closer to the pupil and his curiosity. We wanted to teach students how to think, to look for answers to the questions, to ask the right questions and get the answers.

Curricular connections, as identified by various authors (Škerjanc, Rutar Ilc) allows integration through content, activities, teaching methods and procedures (eg, active learning, project-based approach), the use



of learning tools (eg. ICT, thinking processes, skills and habits (eg. developing critical thinking, creative thinking, problem solving abilities and decision-making, the so-called skills for the 21st century).

So we connected with the geography course, in which the students discussed the South and Southwest Asia. Each student got his teaching unit and guidelines for the work from the curriculum. First, they made a draft of a final product, and then the presentation for interactive whiteboard. Presentation to the classmates was performed in the end. Each student needed to prepare activities for classmates and thus checked whether classmates understood the presentation.

Uporaba e-listovnika v razredu

The use of e-portfolio in the classroom

Polona Drenik Trop, Petra Čalić • Srednja šola za farmacijo, kozmetiko in zdravstvo Ljubljana

Povzetek: Prispevek opisuje konkretno uporabo e-listovnika v razredu pri delu z dijaki na Srednji šoli za farmacijo, kozmetiko in zdravstvo v Ljubljani. Projektni tim sestavlja šest profesorice in dva oddelka dijakov kozmetične smeri.

Članek predstavlja uporabo e-listovnika pri predmetu podjetništvo. Dijaki so skozi proces uporabe e-listovnika pri pouku opravili zaporedje štirih ciklov na temo ustvarjanja podjetja: od iskanja poslovnih idej do nastanka virtualnega podjetja. Poslovni načrt in predstavitev novega podjetja sta vpeta in predstavljena v e-listovniku. Dijaki so si v okolju Mahara z uporabo forumov med seboj izmenjavali izkušnje, kritično prijateljevali in delili mnenja.

Dijaki so ves čas imeli pomoč profesorice, ki poučuje predmet podjetništvo in profesorico računalništva, ki je nudila tehnično pomoč pri spoznavanju okolja Mahara in drugih računalniških programov.

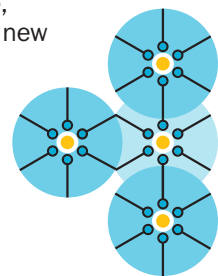
Dijaki so po končanem delu in zaključku četrtega cikla izpolnili anketo, ki je pokazala, da so e-listovnik uporabljali izključno za potrebe šolskega dela. Našli so povezavo s Facebook profilom, prednost uporabe vidijo predvsem v tem, da so podatki na spletu sistematično pregledno urejeni, da znajo kritično prijateljevati. Težave, s katerimi so se srečevali, so bile predvsem tehnične narave: dodajanje datotek, urejanje pogleda ipd.

Uporaba e-listovnika je smiselna in uporabna, saj zagotavlja sistematično shranjevanje učnih listov, posameznih del, raziskovalnih pristopov in nalog, interpretacijo rezultatov, grafične prikaze, prikaze s fotografijami in organiziranje pogledov, ki jih lahko določijo tudi sami dijaki.

Abstract: The paper is a clear presentation describing the many uses of e-portfolios in the classroom by our students at Secondary school of Pharmacy, Cosmetics and Health Care in Ljubljana. Six teachers and two departments of students were involved in our project team.

This paper is introducing the use of e-portfolio within a subject Entrepreneurship. The students have undergone four cycles while using e-portfolio in the classroom, by starting with concepts of business ideas, to creation of virtual enterprise, which is integrated into e-portfolio as a business plan and introduction of a new enterprise. Exchange of experiences and opinions made some productive (so called "critical") friendships among students.

Availability of Entrepreneurship teacher and technical help, along with



introducing of Mahara's apps by teacher of Computer Science, was continuously there for all the students involved.

The survey sheet done by our students, after the finishing fourth cycle of the process, has clearly shown the following: e-portfolio was used for school work only, linkage with Facebook was found, it is useful to use since all the data are systematical to be found somewhere in the web sites, knowing of term critical friendship and how to become one, difficulties they dealt with were mostly ones of technical nature, like how to add a file or editing of the view.

The use of e-portfolio has demonstrated as advisable and useful tool by providing a systematical saving of worksheets, single tasks, research approaches and tasks, interpretation of results, graphic displays, photo displays and implementation of views that can be defined independently by students.

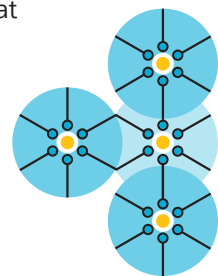
Sodelovalno reševanje problemov pri opravljanju kolesarskega izpita

Cooperative problem solving in obtaining a cyclist's licence

Andreja Žavbi Kren • Osnovna šola Toma Brejca Kamnik

Povzetek: Sodobna družba se vrti okoli informacijsko-komunikacijske tehnologije (IKT), s tem pa tudi učenje in poučevanje v slovenskih šolah. Digitalno kompetenco učenci razvijajo ne samo pri pouku, ampak tudi pri ostalih dejavnostih, ki potekajo v vzgojno-izobraževalnih ustanovah. V petem razredu se po opravljenem teoretičnem izpitu in praktičnemu usposabljanju za kolesarski izpit začne vožnja v resničnem prometu (ZVCP, 2004). Preden učenci začnejo s samostojno vožnjo v prometu, je priporočljivo, da ponovijo cestna pravila in se predhodno seznanijo s progno. Vse to lahko izvedemo s pomočjo IKT opreme z metodo inovativne pedagogike ena na ena. Učenci so si v računalniški učilnici vsak na svojem računalniku ogledali posnetek, ki sem ga že prej posnela z učenko. Učenko pred vožnjo nisem posebej pripravila, saj sem želela, da ostali učenci najdejo napake, jih analizirajo, utemeljijo. Po individualnem ugotavljanju in iskanju napak v posnetku, je sledilo skupno vrednotenje vožnje učenke ter iskanje boljših rešitev za ovire, ki so se zgodile v dani situaciji. Čeprav je delo potekalo individualno, se je pokazalo, kako lahko sodelovalno učenje pomaga pri razvoju samostojnosti za delo. Prednost opisanega načina preverjanja znanja je bila večja motivacija učencev za delo in razvijanje digitalne kompetence. Ogled posnetka skupaj z analizo, je učencem zagotovil razvoj višjih taksonomskih stopenj, ki pripomorejo k trajnejšemu znanju.

Abstract: Modern society is surrounded by information and communications technology (ICT) and so is learning and teaching in Slovenian schools. Digital competence is developed not only in class but also during other activities carried out by educational institutions. Once passing the theoretical exam and practical cyclist's licence qualifications, 5th grade students are faced with real life traffic (Road Traffic Safety Act, 2004). It is recommended students revise the rules of the road and get acquainted with the test route before they can get actively and independently involved in traffic. All this can be done by means of ICT equipment with the one-to-one innovative pedagogy method. A video that had previously been recorded with one of the students was viewed by other students individually in the computing room. The student in the video had not been previously prepared for the cycling, since the aim was for others to see, analyse and substantiate the mistakes made by the



student in the video. After establishing and finding the mistakes in the video individually, a common evaluation of the cycling was done and students tried to set forth better solutions to the problems featured in the traffic situations in the video. The approach showed that although the work was carried out individually, cooperative learning helped students grow more independent in their work. The advantages of the described approach to student testing are higher motivation and development of digital competence. Watching the video and analysing it enabled students develop higher taxonomic levels, which contribute to long-term knowledge.

Preverjanje in ocenjevanje znanja s kvizom v Moodleu

Evaluation and assesment of knowledge with help of a quiz in Moodle

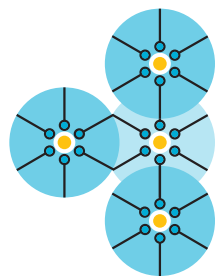
Mojca Dolinar • Zavod RS za šolstvo
Marija Pisk

Povzetek: V okviru dela v e-razvojni skupini za razredni pouk smo v šolskem letu 2012/2013 namenili pozornost možnosti preverjanja in ocenjevanja znanja s kvizi v Moodleu (Modular Object Oriented Dynamic Learning Environment).

Pri preverjanju in ocenjevanju znanja lahko izbiramo različne načine. Tehnološki razvoj nam omogoča, da znanje preverjamo in ocenjujemo tudi z informacijsko-komunikacijsko tehnologijo. Med možnostmi, ki so nam na voljo, smo izbrali odprtokoden brezplačen program, ki je za uporabnika varno spletno učno okolje. V njem smo preverili prednosti in slabosti uporabe aplikacije Kviz.

Ocenjevanje znanja smo načrtovali v pisni obliki, pri čemer smo načrtovali sestavo testa z mrežnim diagramom in upoštevali priporočila za sestavo veljavnega in objektivnega preizkusa znanja. Pripravili smo različne primere in jih prilagodili za izvedbo v aplikaciji Kviz. Kviz omogoča učitelju, da pripravi preizkuse in ocenjevanja znanja za učence ter opredeli čas reševanja in število reševanj v spletni učilnici. Pri oblikovanju nalog imamo na izbiro vprašanja drži – ne drži, vprašanja z več možnimi odgovori in označitvijo pravilnega, vprašanja s kratkimi odgovori in esejska vprašanja. Vprašanja učitelj shranjuje v zbirki in jih lahko uporabi v različnih kvizih, ki jih pripravlja za učence. Povratna informacija o uspešnem reševanju je odvisna od vrste vprašanja, ki ga oblikujemo. Program da učencu povratno informacijo glede na opredeljene pravilne odgovore za večino nalog, razen esejskih, ki jih mora učitelj pregledati in nato točke ročno vpisati k odgovoru. Učitelj lahko izbira med dvema možnostma prikaza rešitev in doseženih točk, po učencu ali za cel razred.

Abstract: As a part of work in our elementary education e-development group we've payed a lot of attention to different possibilities of evaluation and assesment via quiz in Moodle (Modular Object Oriented Dynamic Learning Environment). The technological development enables us to assess and evaluate with the help of ICT. As the best option we have chosen the open source freeware program with safe on-line learning environment. Written form of knowledge assesment was used as a base for making the application Quiz. Advantages and disadvantages were thoroughly



analyzed and the recommendations for the composition of a valid test were taken into account. We took different cases of tests and adjusted them for use in the Quiz application. Quiz helps teacher with the preparation of an on-line exam, it can also help determine the time and number of attempts given to students in the virtual on-line classroom. Supported types of questions are: true-false, marking single and multiple correct answers, short written answers to essay type questions. Feedback depends on the type of question, simple ones are provided automatically, the essay type answers must be checked and graded manually. Teacher has the option to store data in a collection and to use them in all kind of combinations. Results can be displayed in two different ways, individually or for the whole class together.

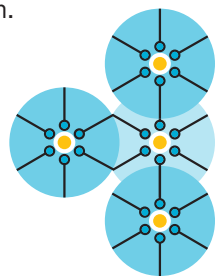
E-listovnik v formativnem spremljanju znanja pri pouku matematike: krog in krožnica

E-portfolio in formative assessment of knowledge in math class: a circle and a circumference

Elizabeta Žabkar • Osnovna šola 8 talcev Logatec

Povzetek: Pri pouku matematike v osmem razredu sem se odločila za formativno spremljanje znanja o krogu in krožnici. Medtem, ko smo se v šoli učili o več-členikih, so učenci doma, korak za korakom ponovili že znane pojme o krogu in krožnici in raziskovali, kaj vse novega bi se še lahko naučili. Pri delu sem jih usmerjala, spremljala in skupaj smo oblikovali vedno boljše izdelke. V svoje delo sem vključila e-listovnik. Učenci so v listovnik zapisali, kaj že znajo, kaj želijo doseči – kaj so njihovi cilji, kako bodo cilje dosegli, kje bi lahko svoje znanje še nadgradili in kako bodo dokazali, da so cilje dosegli. Med raziskovanjem so kritično prijateljevali s sošolci. Na koncu smo analizirali samoevalvacije učencev. Pri delu nas je vodila ustvarjalnost. Učenci so ustvarili čudovite predstavitve s pomočjo Power pointa in Prezija. Na roke so narisali slike, ki so jih kasneje fotografirali in shranili v listovnik. S krožnico in krogom so se zabavali in hkrati so se naučili veliko novega. Učenci so bili zelo motivirani za svoje delo, ki jim je omogočalo veliko ustvarjalnosti, raziskovanja in dela z računalnikom. Večina učencev je opravila vse naloge, s čimer sem dosegla zastavljeni cilj.

Abstract: We decided to perform formative assessment in math class in 8th grade; the topic was "A circle and a circumference". While learning about multinomials in school classes, the students' home work was to repeat what they had learnt about a circle and a circumference. Their task was to explore new facts on the topic under the supervision of the teacher. I introduced e-portfolio into this project. The students used it for writing down their findings, the goals and the ways to achieve them. The students were encouraged to implement critical friendship with their classmates. At the end of the project we analysed the self-reviews of the students. The project was driven by our creativity – the students created amazing presentations of their work using Power point or Prezi. They scanned pictures they produced and stored them in e-portfolio. The students have learnt a great deal yet they had a lot of fun while learning. The creativity, the research and the use of computers highly motivated them. We exceeded the goals and consider the project very successful.



Poglej doma, ustvari v šoli

Look at home, create in school

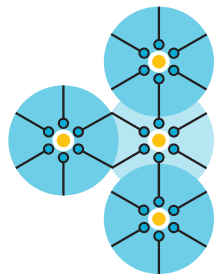
Dagmar Logar • Prva gimnazija Maribor

Povzetek: Ključna naloga učitelja informatike je usmerjanje učencev k aktivnemu, ustvarjalnemu in problemskemu učenju in ga pripraviti na kompetence 21. stoletja. Za vzpodbujanje dinamičnega in interaktivnega učnega okolja je metoda zvrnjene (flipped) učenja zelo primerna, omogočilo pa jo je tudi sodelovanje v projektu E-šolska torba, saj so dijaki izbranega oddelka prejeli tablične računalnike, ki jim omogočajo enake pogoje za učenje doma in v šoli. Metodo sem preizkusila za grafično oblikovanje v brezplačni aplikaciji SketchBook Express, ki je na razpolago za operacijska sistema iOS in Android. Dijaki so se na pouk pripravili tako, da so si v prostem času namestili aplikacijo in pogledali video vodnike, objavljene v e-učilnici predmeta. Pri pouku so se v prvi etapi dela razdelili v skupine in prešli na reševanje naloge na delovnem listu, ki sem ga objavila v e-učilnici. Pri delu so si pomagali, v primeru težav pa sem jim pomagala z usmerjevalnimi vprašanji. Če se je ista težava pojavila v več skupinah, sem rešitev demonstrirala s projekcijo zaslonske slike iPada, kar omogoča Apple TV. V drugi etapi dela so dijaki samostojno reševali avtentičen praktičen primer voščilnice in rešitev naložili v e-učilnico. Rešitve smo analizirali in ovrednotili, postopek izdelave najboljše rešitve pa tudi demonstrirali. Metoda omogoča dijakom večjo ustvarjalnost in samostojnost, učitelju pa več časa za aktivno delo z učenci, diferenciacijo in pristop, ki je prilagojen posamezniku.

Abstract: The key task of the IT teacher is to guide the students towards active and creative problem learning, and prepare them for the competences of the 21st century. The flipped learning method is very convenient to encourage a dynamic and interactive learning environment. Participation in the E-schoolbag project allowed us to implement the method, as students have tablets which provide the same conditions for learning at home and at school. The method was tested for introducing graphic design in Sketchbook Express, a free application that is available for iOS and Android.

Students had been required to install the application before the lesson and to examine the video guides, published in the e-learning environment. During the lesson, students were first divided into groups and began to solve the tasks on the worksheet provided in the e-learning environment. They helped each other. If they had problems, I helped them with guided questions. If the same problem occurred in several groups, I demonstrated the solution by projecting iPad's screen image. In the second phase, students independently

solved an authentic practical example and uploaded their solutions in the e-learning environment. The results were analyzed and evaluated, and we also demonstrated the process of making the best one. The flipped learning method enables more creativity and autonomy for students, and more time for the teacher to work actively and individually with students.



Prednosti in izzivi uporabe tabličnega računalnika pri pouku

Advantages and challenges of using tablets in teaching

Irena Gole • Osnovna šola Bršljin Novo mesto

Povzetek: Spletno učenje in učenje prek e-učbenikov učencem predstavlja “okno v svet”, saj na ta način hitro dostopajo do bogatih virov znanja. Učenje ena na ena s tabličnim računalnikom od učitelja zahteva, da je fleksibilen in zna prehajati iz tradicionalnega načina poučevanja v uporabo sodobne tehnologije. Ob tem mora dobro poznati učence, prednosti takega načina učenja in poučevanja ter izzive in težave, na katere mora biti pozoren ves čas uporabe tabličnega računalnika pri pouku. Tablični računalniki so zanimivi za učitelje in učence. Učitelju pomagajo uvajati več ustvarjalnosti in hkrati raziskovalno učenje v pouk, učencem omogočajo, da sami spremljajo svoje učenje in ga prilagodijo svojim sposobnostim ter si popestrijo učni proces. Uporaba tabličnega računalnika pri pouku ima svoje prednosti (informacije so hitro dostopne), a tudi slabosti (učitelj dejavnosti le vodi in nudi oporo, nima pa popolnega nadzora nad dejavnostmi učencev), zato je treba sodobno tehnologijo v učni proces uvajati s premislekom. Uporaba tabličnega računalnika pripomore k lažjemu usvajanju učnih vsebin, vendar se moramo zavedati, da je samo podpora, ki ne more nadomestiti konkretnih dejavnosti.

Abstract: E-learning and learning with e-textbooks represent a “window to the world” for students because they can quickly access rich sources of knowledge. Teaching one-to-one with the tablet demands flexibility and ability to overcome the traditional teaching by using modern technology. The teacher must, therefore, know their students and the advantages of this kind of learning and teaching very well as well as its challenges, which he/she must be aware of while using the tablet in the classroom. The tablets are interesting for teachers and students. They help the teacher bringing more creativity and inquiry-based learning into teaching. The students can monitor their learning, adjust it according to their own abilities and make their learning process more interesting. Using the tablet in the classroom has its advantages (the information is easily accessible), but there are also disadvantages (the teacher only leads the activities and offers support, and has no control over the activities of the students), so modern technology must be introduced with consideration. Using the tablet helps in easier adoption of learning contents, but we need to realize that this is only support and cannot substitute actual activities.

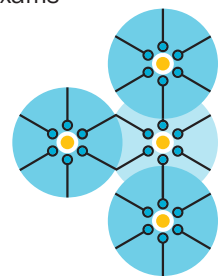
IKT kot pomoč pri odkrivanju šibkih področij znanj posameznika in uporaba teh podatkov za individualizacijo pouka

Ict as a tool for discovering weak knowledge of individual student and use of these data for individualization of classes

Janja Jakončič • Gimnazija Poljane Ljubljana
Tanja Ahčin • Gimnazija Franceta Prešerna Kranj

Povzetek: V prispevku je prikazan primer uporabe ustreznega informacijsko-komunikacijskega orodja za vrednotenje znanja dijakov kot pomoč za pripravo dijakov na zaključni izpit. Del priprave na eksterni preizkus obveznih in izbirnih predmetov na maturi je tudi reševanje javno objavljenih maturitetnih pol in s tem preverjanje izpitne pripravljenosti dijakov. Dijaki se še premalo zavedajo pomena pravičnega predmaturitetnega testiranja ter povratnih informacij, zato je priprava dijakov na zmožnost samoevalvacije težja naloga, ki zahteva učiteljevo strokovnost in veliko časa. Pomembno je doseči samostojnost dijakov pri reševanju pol, zagotoviti ponudbo nalog po meri uporabnika, vzpodbujati uporabo informacijsko-komunikacijskih tehnologij pri učenju ter najpomembnejše, iskati možnosti razvoja in uporabe novih metod poučevanja in učenja. Zato smo preverili, ali si lahko z ustreznim orodjem olajšamo evalvacijo matur v smislu analize rezultatov vsakega posameznika, iskanja snovi, ki jih dijaki najmanj obvladajo, uporabe teh podatkov v razredu in vzpodbujanja medsebojnega sodelovanja dijakov, sodelovanja dijakov in učitelja ter zdrave tekmovalnosti med dijaki. Maturitetne naloge smo ustrezno kategorizirali, jih integrirali v izbrani informacijski sistem, dijake aktivno povezali in avtomatizirali del učiteljevega dela. Ugotovili smo, da lahko na ta način izboljšamo pripravo na zaključno testiranje, vzpodbujamo izobraževanje na daljavo, razvijamo zvrnjeno učenje in uvedemo igrifikacijo kot motivacijo za učenje.

Abstract: In our article we present a case of using an ICT tool for evaluating student knowledge as an aid in preparing the students for the final exam. Part of the preparation for the final exam is answering publicly accessible exams from the previous years, with which we can test the students' readiness for the final exam. Students are not yet sufficiently aware of the importance of pre-exam testing and feedback. Therefore teaching the students the ability of self-evaluation is a tough job, requiring expert knowledge





and time from the teacher. Achieving students' autonomy in answering tests, ensuring suitable and individually adapted content, encouraging the use of ICT in learning and looking for possibilities of use of new teaching and learning methods are all very important tasks. With that in mind we checked if we can make the process of pre-exam evaluation easier with the use of a suitable ICT tool, especially in regard to individual's result analysis, identifying subjects with worst results, use of these data in class, encouraging cooperation between students and teacher and healthy competitiveness among students. We have categorized the tasks from old exams, integrated them in the chosen information system, connected the students and automated part of the teacher's work. We found that we can improve the preparation for final exam, encourage remote learning, implement flipped learning, as well as use gamification for higher student motivation.

Učenje v naravi z uporabo tabličnih računalnikov

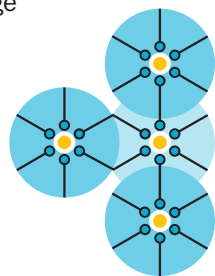
Learning outside of the classroom with tablet PCs

Brigita Klemen • Pedagoška fakulteta Ljubljana, magistrska študentka

Alenka Žerovnik • Pedagoška fakulteta Ljubljana, asistentka

Povzetek: Sodobni didaktični pristopi omogočajo, da pri poučevanju uporabljamo raznolike oblike učenja in poučevanja. Učitelji si želimo, da bi bilo poučevanje tesno povezano z življenjem, naloge in problemi zastavljeni problemsko in načrtovani tako, da bi učenci dobili znanja, sposobnosti in veščine za življenje. Pri povezovanju učenja z življenjskimi primeri učitelji pogosto naletimo na težave zagotavljanja ustreznih pripomočkov. Naš cilj je povezati dve različni skupini učencev in povečati prenos znanja med njima, pri čemer poučevanje poteka deloma v razredu, deloma na terenu. Aktivnosti v razredu so namenjene spoznavanju učencev različnih skupin. Potekajo v obliki različnih socialnih iger, ki so prilagojene starosti in potrebam otrok. Ko se socialna interakcija med vključenimi učenci okrepi, učitelj vpelje terensko učenje. Pri tem si pomaga s tabličnimi računalniki. Le-ti služijo kot učinkovit pripomoček, ki učencem omogoča, da prek zaslona spremljajo interaktiven zemljevid poti in v naravi iščejo ustrezne označbe. Na označenih mestih rešijo naloge, ki so povezane z dogajanjem v naravi. Ker naloge oddajo direktno prek spleta, lahko učitelj spremlja rezultate učencev in jim priskrbi takojšnjo povratno informacijo. Učenje je učinkovitejše, za učence bolj motivacijsko, saj učence z namigi in novimi nalogami spodbujamo k nadaljnjemu raziskovanju. Poleg obravnave same snovi, vezane na več predmetnih področij kurikula, krepimo tudi socialno interakcijo med skupinama.

Abstract: Modern pedagogical approaches enable the use of various forms of learning and teaching. Teachers want to link learning to real life with problems and assignments formed in a way that students get the necessary knowledge and skills for life. In trying to do that, teachers often face difficulties finding and using suitable tools. Our goal is to connect two different groups of students and increase knowledge transfer between them. One part of the teaching process takes place in the classroom and the other outside, in nature. The intention of the classroom activities is interaction of the students from different groups. Activities take place in the form of different social games, adapted to the age and needs of the children. When the social interaction between students strengthens the teacher introduces field learning with the help of tablet computers. They serve as an effective tool, enabling students to follow an interactive map of the route and look for specific signs in the nature.



When they reach marked points they answer pre-prepared questions. Because the questions are answered via Internet the teacher can follow their responses in real time and provide immediate feedback. Learning is therefore more effective and students are motivated for further research due to constant incentive and tips. Besides covering the required learning material from different parts of the curriculum, we also strengthen social interaction between the two groups.

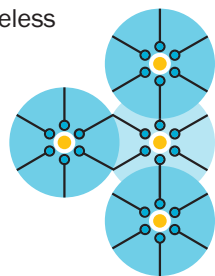
E-listovnik: “Boljši sem in imam dokaz!”

E-portfolio: “I'm better and I have proof!”

Lea Senica • Osnovna šola Dobje

Povzetek: Mahara je programska oprema, ki omogoča tvorjenje elektronskega listovnika, spletnega dnevnika, življenjepisa ter predstavlja socialno mrežo. Uporabnikom torej zagotavlja orodja za oblikovanje razvojnega okolja za osebno in poklicno izobraževanje. Je domena nekoliko starejših učencev, vendar ob ustreznem vodenju učencev izvedljiva že v petem razredu. Pri dejavnosti, ki jo predstavljam, sem združila tri projekte Zavoda RS za šolstvo. Ne le pilotni projekt EUfolio (Mahara), temveč tudi pilotni projekt Uvajanje uporabe e-storitev in e-vsebin s pomočjo tablic ter projekt Bralne pismenosti. Vzrok za izbrano dejavnost je bila šibka bralna tehnika učencev. Le-to sem želela izboljšati s pomočjo dveh orodij: Mahare kot spletnim mestom, s katerim so učenci načrtovali potek izvedene dejavnosti, ugotavljali svoj napredek in kritično prijateljevali s sošolci ter tablice; ter kot pripomoček pri snemanju branja in načrtovanju dejavnosti v Mahari kjerkoli in kadarkoli. Ker je bila načrtovana dejavnost dobro zasnovana, Mahara pa je omogočala tudi formativno spremljanje, so bili rezultati pozitivni. Zapisi, ki so jih kreirali učenci, so bili bolj skopi (saj gre za peti razred), kot bi bili v primeru, če bi bili vključeni starejši učenci, vendar so se le-ti kljub temu naučili rokovati z Maharo, snovati cilje, ki so jih želeli doseči, razmišljati o svojem napredku ter kritično prijateljevati s sošolci; s tem pa so pridobili kompetence, ki jim bodo služile pri osebnem in poklicnem izobraževanju.

Abstract: Mahara is software that enables us to create an e-portfolio, blog, curriculum vitae, and represents a social network. It provides users with tools to create a development environment for personal and professional education. It is a domain of older pupils, but with the proper management of pupils already possible in fifth grade. In activities that I represent, I joined three projects of the National Institute of Education: the pilot project the EUfolio (Mahara), the project Induction of e-content development services by using tablet computers and Reading literacy project. The reason for choosing these activities was pupils' weak reading technique. I wanted to improve it with the help of two tools: Mahara as a web application, which was used for planning the activities, observing their progress and critical friendship; and tablet computers, that were used for recording their reading and for planning the activities in Mahara, wherever and whenever. Since the activities were well planned and Mahara supported formative assessment, the results were positive. Pupils' notes were more moderate (these are fifth graders) as they would be in the case of older students, but nevertheless they have learned to work with Mahara, write down goals that they want to achieve, think about their progress and critically comment with classmates. They have acquired competences that will serve them in their personal and professional education.



Uporaba videokamere pri refleksiji in spodbujanju jezikovnih zmožnosti pri najmlajših otrocih

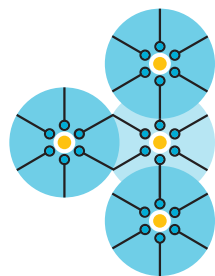
Using a video camera in the reflection and promotion of language skills in young children

Bernarda Hvala • Vrtec Ledina Ljubljana
Dejan Čegovnik • MOJ TV d.o.o

Povzetek: Prispevek bo prikazal uporabo kamere v vrtcu kot učnega pripomočka v prvem starostnem obdobju. Kamero sva uporabila z namenom posneti dejavnost otrok in proučiti njihove odzive. Posnetki so omogočili večkratno opazovanje reakcij posameznih otrok. Na ta način sva bolje spoznala močna in šibka področja otrok in to uporabila pri spremljanju otrok in načrtovanju vzgojno-izobraževalnega dela. Posnetke sva večkrat pokazala otrokom in ob tem posnela njihove odzive. Otroci so si jih z zanimanjem ogledali, pozorno poslušali in med seboj intenzivno komunicirali. Ugotavljali so, kdo je na posnetku, kaj dela, kaj je rekel, kdo je manjkal ipd. Z analizo posnetka odzivov otrok sva se zavedla, da so otroci intenzivneje sodelovali kot pri običajnih dejavnostih, pozorno poslušali in uporabljali besedišče, ki ga doslej nisva zaznala. Uporaba kamere pri delu z najmlajšimi je pokazala, da jo je smiselno uporabljati za vrednotenje dejavnosti, za skupne refleksije z otroki, za sodelovanje s starši. Pokazale so se tudi prednosti timskega dela. Dobrodošla je bila pomoč soavtorja, ki je s svojimi izkušnjami in nasveti pripomogel h kvalitetnejšim posnetkom otrok. Razmišlja, da bi otrokom v prvem starostnem obdobju omogočila rokovanje s kamero in snemanje dogajanja v oddelku. Ali bodo kos takšnim izzivom, pa boste dobili odgovor na SIRiktu 2015.

Abstract: The article will show you how camera as a learning tool is used in kindergarten. The purpose of using video camera was to record the activities of children and how they are reacting and responding. The recordings gave us a chance of multiple reaction monitoring of individual children. In this way we got better insight of each individual in a group and learn about their strong and weak areas. Several times we showed the footages we took to the children and at the same time we filmed their reactions. Children were very interested in footages and while they were watching the tape they commented on it and communicated with each other. Children tried to identified who was on the tape, what he was

doing, who was missing that day, etc. By analyzing reactions of the children on tape we noticed that they were more intensely involved than in normal activities and they were using vocabulary that we never noticed before. Using the camera to work with the youngest showed us that it is very helpful for the evaluation of activities, for joint reflection with children and also when we are working with parents. The benefits of team work were also shown. Coauthor was of great support because with his advices and support we made better videos. In the future we would like to give children of age 1–3 a chance to handle with a camera so they could record activities in a group. If they will be able to cope with such challenges you will find out at SIRikt 2015.



Učenje programiranja na primerih iz elektrotehnike

Learning programming through electrical engineering projects

Tomaž Kušar • Osnovna šola Mokronog

Povzetek: Prvi programski stavek vsakega priročnika se običajno začne z izpisom "Hello, world". Če nadaljujemo s programiranjem po korakih, kot jih narekuje priročnik, se seznanimo z osnovami. Aplikacije, prek katerih se naučimo osnov programiranja, so za nekoga zanimive, za drugega pa na moč dolgočasne.

A programiranje lahko postane zanimivo prav za vsakogar. Ni nujno, da so učenci, ki so nadarjeni na tehničnem področju, navdušeni tudi nad programiranjem. Običajno pa vsakodnevno radi posežejo po sodobnih tehnološko dovršenih elektronskih napravah, kot je recimo mobilni telefon ali tablica, in raziščejo vse aplikacije ter spoznajo vse prednosti, ki jih taka naprava nudi. V članku je predstavljen primer enostavnega projekta iz elektronike, prek katerega se lahko začetnik ne nazadnje nauči tudi osnov programiranja, hkrati pa izdelava zanimivo in uporabno napravo oziroma aplikacijo s pomočjo mikrokrmilnika in mobilnega telefona. Omenjeni so načini učenja programiranja v enostavnih in prosto-dostopnih programskih okoljih. V zaključku je predstavljen tudi odziv učencev na takšen način poučevanja programiranja.

Abstract: The first sentence of each software-manual usually starts by printing a "Hello, world". If we continue with the programming step by step, as dictated by the manual, we get acquainted with the basics. Applications, through which we learn the basics of programming, may on one hand, be of interest to someone, but also extremely boring for another. But programming can become interesting for everyone.

Students who are talented in technical field are not necessarily impressed by programming. Usually they like using modern high-tech electronic devices such as their mobile phones or tablet computers. Moreover, they also like to research all the applications and learn about all the benefits that such devices offer.

This paper presents a simple example project from electronics through which a beginner can finally learn the basics of programming while at the same time create an interesting and useful device or application using a microcontroller and a phone. In continuation some forms of learning of programming in simple and freely-available software environments are presented. We conclude with pupils' response on this way of teaching programming.

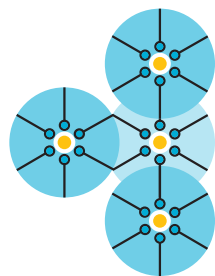
E-listovnik učitelju v pomoč

E-portfolio for teacher's support

Anita Smole, Sonja Strgar • Osnovna šola Vide Pregarc Ljubljana

Povzetek: Cilj predstavljenega dela je bil urediti virtualni prostor, kjer bodo na enem mestu zbrane različne vrste dokumentov, ki nastanejo pri učiteljevem delu in jih le-ta pogosto potrebuje. V ta namen smo izdelali e-listovnik Mahara, dostopen prek spletne strani www.sio.si. E-listovnik vsebuje več pogledov: letne ocene (gre za zbirko ocenjevalnih listov za oceno delovne uspešnosti javnega uslužbenca v ocenjevalnem obdobju), priprava na letni razgovor učitelja (datoteke, povezane z vsakoletnim razgovorom z vodstvom šole) in učiteljevo delo (preteklo, tekoče in načrtovano). Virtualni prostor si delita dve učiteljici. Vsaka dostopa s svojim uporabniškim računom in ima skrbniške pravice, dodeljene z ustvarjeno skupino. Takšen način sodelovanja omogoča izmenjavo datotek, evalviranje in načrtovanje učiteljevega dela, delitev mnenj, tako se posledično gradi tudi socialna mreža. V prihodnje razmišljamo, da bomo povečali obseg e-listovnika z dodajanjem novih pogledov; pogled učiteljevo delo pa bomo razdelili na več posameznih pogledov, saj je nastala kar obsežna zbirka dokumentov. Na ta način bomo povečali preglednost in uporabnost virtualnega prostora.

Abstract: The aim of this article was to set up a virtual classroom for storing different documents created and often used during teacher's work. For this purpose we created an e-portfolio Mahara which can be accessed via www.sio.si. E-portfolio contains several menus: performance evaluation (collection of evaluation sheets to evaluate public employee's performance in observed period), annual interview preparation (files linked to annual interview with school's management), and teacher's work (past, current, and planned). The virtual classroom is shared by two teachers. Each of them accesses the virtual classroom with an individual user account and has administrator rights assigned by an individual group. Such cooperation enables us to share files, evaluate and plan teacher's work, exchange ideas, and consequently build a social network. We plan to increase the extent of e-portfolio by adding new menus, while the teacher's work field will be divided into several sub-menus since a comprehensive collection of documents has already been created within this field. By doing that we'll improve the transparency and usability of this virtual classroom.



Sodelovalno delo in učenje s tabličnimi računalniki

Collaborative work and learning using tablet computers

Boštjan Papež • Osnovna šola Bršljin Novo mesto

Povzetek: Sodelovalno in skupinsko učenje si navadno predstavljamo kot delo na skupnem izdelku. V osnovni šoli je to navadno izdelava plakata, skupne predstavitve, skupno reševanje problema ali izdelava učila. V svoji fizični obliki so izdelki shranjeni na eni lokaciji. Tako učencem niso vedno na voljo. Zato je njihova uporabnost za učenje, po tem, ko so izdelani, omejena. Za njihovo izdelavo je treba biti v istem prostoru in imeti dostop do istega gradiva, ki je pogosto omejeno. Zato je lahko izdelava teh izdelkov dolgotrajna. Z uporabo tabličnih računalnikov in nekaterih aplikacij lahko te pomanjkljivosti zaobidemo. Z uporabo storitev v oblaku lahko gradivo za učence pripravimo vnaprej: vključimo lahko povezave do virov na spletu, slikovni, avdio in video material, s pomočjo fotoaparata na tablici pa lahko dodamo tudi poglavja ali članke iz knjig in revij. Učenci so v svojem raziskovanju tako bolj usmerjeni, gradivo pa je v enaki meri dostopno vsem. Za sodelovalno delo lahko uporabimo aplikacije ali spletna orodja, ki omogočajo urejanje istega dokumenta v realnem času. Učenci lahko urejajo izdelek ne glede na lokacijo in čas. Učitelj pa ima neomejen vpogled v delo učencev: ga spremlja, usmerja in vzpodbuja.

Abstract: Collaborative and group learning is usually described as the work on the common product. In the primary school it is usually poster, joint presentations, joint problem solving or making learning material. In its physical form products of such work are stored in one location. Thus, they are not always available for students. Therefore, the usability of such products for learning, after they are made, is limited. For the task of making them, students have to be in the same room and have access to the same material, which is often limited. Therefore, it may take a long time to make them. By using tablet computers and some applications, we can get around these shortcomings. By using cloud services, material for the students can be prepared in advance: you can include links to on-line resources, images, audio and video material, using the camera on the tablet; you can add chapters or articles from books and magazines. Students are thus more guided in their research and material is equally accessible to all. For collaborative work we can use tablet applications or web-based tools that allow you to edit the same document in real time. Students can edit the product regardless of their location and time. The teacher has unlimited access to the work of students: he can monitor, direct and encourage it.

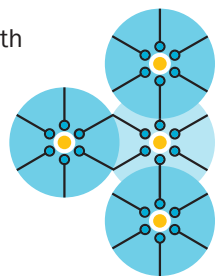
Tablični računalnik in barvni kontrasti pri pouku likovne umetnosti

Tablet computer and colour contrasts at art lessons

Franc Grobelšek • Osnovna šola Bistrica ob Sotli, Osnovna šola Kozje

Povzetek: Pomen računalnika pri sodobnem pouku likovne umetnosti je že potrjen in o njem ne gre dvomiti. Uporabljamo ga kot učni medij, orodje za likovno ustvarjanje in kot informacijsko-komunikacijsko komponento. Tablični računalniki in sorodne naprave torej lahko služijo popolnoma istim namenom. S svojo enostavnostjo, specifičnimi fizičnimi lastnostmi in mobilnostjo pa odpirajo nove možnosti, ki jih je vredno skrbno pretehtati in smiselno uporabiti. Vključenost v projekt Inovativna pedagogika ena na ena, nas je pri tem še dodatno spodbudila. Učence osmega razreda smo opremili s tabličnimi računalniki in skupaj z njimi raziskujemo. Tako razmišljamo o najbolj primernih likovnih vsebinah oziroma delih učnega procesa, kjer bi s tablico dosegli dodano vrednost, tako v smislu znanja kot tudi likovno ustvarjalnega dela. Konkretno predstavljamo primer uporabe tabličnih računalnikov v učnem sklopu o barvnih kontrastih. Tablice so učenci uporabili predvsem kot orodje za likovno gledanje in ustvarjanje. Tablični fotoaparati jim je s pomočjo igre svetlobe ponudil nove zanimive poglede na likovni motiv, program za izrezovanje pa jim je omogočil ustvarjanje zanimivih barvnih kompozicij. V sklepnih urah smo lahko s pomočjo brezžičnega omrežja v zelo kratkem času izvedli tudi kakovostno vrednotenje in vzpostavili interno spletno razstavišče.

Abstract: The importance of computer in modern school fine arts lessons has been confirmed and it cannot be doubted. We use it as a teaching medium, a tool for artistic creation and as information and communication component. Tablet computers and similar devices, can therefore serve the same purpose perfectly. With its simplicity, specific physical characteristics and mobility they open up new possibilities that are worth being considered carefully and used reasonably. Involvement in the project Innovative Pedagogy One-to-one, gave us further stimulation. Eight-grade students were equipped with tablet computers and together with them we explore different functions and possibilities. So we are thinking about the most appropriate artistic content or parts of the learning process, where the tablet could provide added value in terms of both knowledge as well as artistic creative work. We present an example of use of tablet computers in the learning context of the colour contrast. Tablets are mainly used as a tool for viewing and creating artwork.



Through the play of light the tablet camera offers exciting new perspectives of art motifs, and the application for cutting out enables students to create interesting colour compositions. In the final stage of the lesson, we were able to carry out a qualitative evaluation and set up an internal web exhibition in a very short time via wireless network.

5.

Kratke predstavitve • Short presentations

Kratke predstavitve

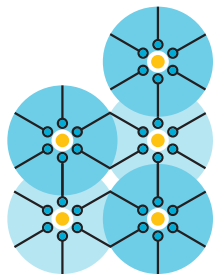
Short presentations

Klasika vsake konference so predstavitve. Ker so bili letos avtorji zelo dejavni, smo morali predstavitve skrajšati in jih zato imenujemo kratke predstavitve.

Bistvo kratke predstavitve je (in vedno bo) predstavitev novosti, ki jih je avtor uporabil v učilnici, z učenci, v naravi ... Od avtorjev lahko pričakujemo dinamično predstavitev, ki bo zanimiva za poslušalce in v kateri ne bodo ponavljali informacij, ki si jih udeleženci konference lahko preberejo v povzetkih. Kratke predstavitve ne bodo daljše od deset minut in bodo moderirane – ne samo časovno, ampak tudi vsebinsko. Vprašanja udeležencev bodo poskrbela za dodatno pestrost.

The classical part of each conference is presentations. As the authors were very active this year, we had to shorten the presentations and so they are now called short presentations.

The essence of short presentations is (and it always will be) the presentation of innovations that have been used with students in classroom, in the nature ... We expect from the authors a dynamic presentation that will be interesting for the audience and which will not repeat the information that conference participants can read in the abstracts. Short presentations will not be longer than ten minutes and will be moderated - not only in time but also in content. Questions from the audience will provide extra diversity.



a

Učenje • Learning

Želimo si učence, ki bodo znali načrtovati svoje učenje! Spodbujanje ustvarjalnosti s pomočjo e-listovnika pri angleščini, slovenščini in ljudskih plesih

We want pupils who will be able to plan their learning! Promoting creativity through e-portfolio in Slovene, English and folk dances

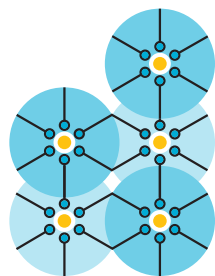
Magda Doberšek, Nataša Robič, Tina Zendzianowsky Čavš •
Osnovna šola Dobje

Povzetek: Ena izmed prioritetenih nalog naše šole je spodbujanje razvoja ustvarjalnosti pri učencih na vseh področjih. Z vključitvijo v projekt EUfolio smo za večino izbrali ustvarjalnost, ki jo z učenci načrtno razvijamo pri angleščini, slovenščini in ljudskih plesih. Kot orodje nam služi spletno okolje Mahara. Učenci so jo sprejeli z navdušenjem, saj jih je predvsem v delu, kjer so si ustvarili profil, spominjala na Facebook. Učitelji smo bili glede tega orodja malo skeptični, ker vizualno ni najbolj privlačen za osnovnošolske otroke, vendar smo nato ugotovili, da so učenci pri učenju, kako upravljati z Maharo, veliko hitrejši kot mi, učitelji.

Pri angleščini se je vsak učenec pisno izrazil o sebi, kar je tudi eden od ciljev pouka tujega jezika. S strani sošolca preverjeno besedilo je nato uporabil v filmu, ki ga je izdelal s pomočjo programa Movie Maker. V svetu slovenske poezije so učenci svojo ustvarjalnost predstavili s kreativnim pisanjem oziroma poustvarjanjem. Ljudski ples jim je bil osnova pri ustvarjanju lastnih koreografij, katerih dokazi so njihovi videoposnetki.

S pomočjo e-listovnika so učenci glede na kriterije uspešnosti spremljali svoj razvoj, postali odgovornejši za svoje učenje, in kar je najpomembnejše, bili zelo ponosni na svoje kreacije.

Abstract: One of our school's priorities is encouraging the development of pupils' creativity in all fields of work. Creativity is also the skill that we chose when we joined the project EUfolio. This skill is systematically developed in English, Slovene and folk dance lessons with a help of a web space called Mahara. Teachers thought at first that the image of this tool isn't attractive enough for the primary school students. But we were wrong. They are much faster on managing Mahara than we. Pupils accepted the web space Mahara with enthusiasm, because the part, where they can



create their own profile, is similar to that on Facebook. They wrote about themselves in English and, after checking the text by one of their school friends, they made a movie by using Movie Maker programme. In the world of Slovenian poetry, the students presented their creativity through creative writing or recreating. Folk dance served them as the basis to create their own choreographies and we also have videos of their work.

According to the success criteria pupils have followed their own development through e-portfolio. They have become more responsible for their learning, and most importantly, they were very proud of their creations.

Uporabniška izkušnja uporabe EUfolia

User experience of EUfolio

Katarina Bizjak Slanič • Osnovna šola Janka Glazerja Ruše

Povzetek: Listovnik je orodje, ki lahko pospeši učenje in podpre poučevanja tako, da poteka bolj intenzivno. E-listovnik, elektronska zbirka, ki jo zbere in ureja uporabnik običajno na spletu, ima v primerjavi s fizičnim prednosti in slabosti.

Mahara je v Sloveniji novo okolje za ustvarjanje e-listovnika in jo podpira Zavod RS za šolstvo v projektu EUfolio. Eden od njegovih ciljev je načrtovanje in izvedba uporabe e-listovnika v funkciji spremljanja in podpore učenja pri pouku.

V prvi vrsti v prispevku s komplementarno uporabo kvalitativnih in kvantitativnih metod raziskovanja ugotavljamo, ali je pouk z uporabo EUfolia bolj učinkovit.

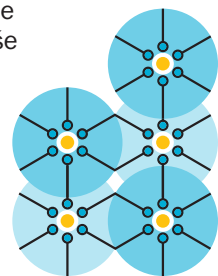
Uporabniško izkušnjo predstavljamo z vidika treh skupin deležnikov: učiteljev, učencev ter podpornih delavcev Osnovne šole Janka Glazerja Ruše, vključenih v projekt. Ker se v današnji družbi ne sprašujemo več, ali pri pouku uporabljati tehnologijo, temveč katero tehnologijo uporabiti, v drugem delu prispevka ugotavljamo, ali je doprinos h kakovosti pouka z novim okoljem Mahara v primerjavi z drugimi orodji (spletna učilnica Moodle, orodja Microsoft Office) večji in ali je s tem njegova uporaba smotrna.

Rezultati nakazujejo, da je uporabniška izkušnja različnih deležnikov projekta različna. Za učence je vrsta orodja manj pomembna kot za učitelje. Med vsemi spremljanimi komponentami se kot najpomembnejša za pozitivno uporabniško izkušnjo nakazuje znanje učitelja za uporabo orodja.

Abstract: Portfolio is a tool, which has the potential to enhance teaching and learning in a positive way. E-portfolio, an electronic collection, usually assembled and managed by a user on the Internet, has in comparison to paper portfolio advantages and disadvantages.

Mahara is a new Internet environment for e-portfolio, supported by National Education Institute of the Republic of Slovenia in the project EUfolio. One of the goals of the project is to plan and implement e-portfolio in the function of assessment and support of learning in the classroom.

In the first part of the paper we complementary use the qualitative and quantitative research methods to determine the effectiveness of teaching with EUfolio. User experience is presented from three perspectives. From the perspective of teachers, pupils and other school staff of Janka Glazerja Ruše primary school included in the EUfolio project. Today the technology in schools is no longer a question therefore we only ask ourselves which technology we are going to use. In the second part of the paper



we investigate the efficiency of Mahara in comparison to other tools we use (Moodle, Microsoft Office, etc.).

The results indicate that the user experience of various stakeholders of the project is different. Students do not differentiate between the different tools as much as the teachers. Among all the components there is an indication that the skill of teachers to use the tools seems to be the most important for positive user experience.

Medpredmetna povezava v učnem okolju Mahara

Cross-curricular connections in the learning environment Mahara

Jožica Tratar, Breda Kerčmar, Slavica Balek Haddaoui, Sandra Vereš •
Osnovna šola Šalovci

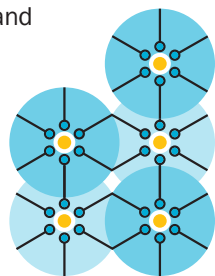
Povzetek: Predstavljamo uporabo e-listovnika pri učencih v procesu učenja v medpredmetni povezavi geografije, slovenščine, fizike ter domovinske in državljanske kulture in etike na izbrano temo. Učenci s pomočjo IKT tehnologije načrtujejo proces učenja v osebnem elektronskem učnem okolju.

Po korakih formativnega spremljanja znanja učenci izdelajo načrt učenja v učnem okolju Mahara. Izpolnijo zavihek *Moje učenje*, kjer ugotavljajo svoje predznanje, si zastavijo cilje in jih medpredmetno povežejo, iščejo strategije za doseg ciljev, zberejo dokaze, evalvirajo svoje delo, podajo vrstniško povratno informacijo. S pomočjo spleta poiščejo ustrezne podatke in z znanjem s področja urejanja besedil oblikujejo turistično zloženko.

Prednosti učenja s pomočjo IKT tehnologije so, da učencu učno okolje Mahara pomaga načrtovati in spremljati pot učenja in lastnega napredka. Zbrane ugotovitve in izdelke, naložene v osebno učno okolje, deli z drugimi vrstniki in učitelji, kar omogoča, da učenci in učitelji lahko dostopajo do zbranih gradiv, jih uporabijo in ovrednotijo. Tako učenje se lahko odvija med poukom, po pouku, v šoli in doma.

Abstract: This paper presents the use of e-portfolio with pupils in the process of learning within a cross-curriculum connection of Geography, Slovene, Physics, Citizenship and patriotic education and ethics, on a chosen topic. By using ICT technology, pupils plan their learning process in a personal electronic learning environment. Pupils create their learning plan in the Mahara learning environment following the steps of formative assessment. They fill in tab page *Moje učenje* (My learning) where they identify their prior knowledge, set learning goals and incorporate them into a cross-curriculum, find strategies to achieve the goals, collect evidence, evaluate their work, give feedback to peers. Searching the web, they find appropriate data and design a travel brochure using text editing knowledge.

The advantages of learning by using Mahara and ICT technology are assistance in planning and monitoring pupil's own learning path and progress. Findings and artefacts are collected and uploaded in a personal learning environment and shared with other peers and teachers, making it possible for learners and teachers to access, use and evaluate the collected material. Such learning can take place during the lessons, after them, at school or at home.



Izdelava spletne strani za učno podjetje s storitvijo Google Spletno mesto

Making a website with Google Website service for a practice firm

Janez Černilec •

Srednja ekonomska, storitvena in gradbena šola, Šolski center Kranj

Povzetek: V tem prispevku se bomo osredotočili na izdelavo spletne strani za učno podjetje s pomočjo Googlovega spletnega mesta. V Sloveniji imamo učna podjetja že več kot eno desetletje. Ko pregledujemo register slovenskih učnih podjetij, ki ga ureja Centrala učnih podjetij Slovenije (CUPS), lahko ugotovimo, da ima v Sloveniji samo 18 % učnih podjetij svoje spletne strani, od tega nekaj navedenih povezav ne deluje. S pomočjo Googlovega spletnega mesta lahko izdelamo vsebinsko in oblikovno dobro spletno stran glede na naše potrebe. Pri izdelavi spletne strani uporabljamo gumbe, ki se nahajajo na Googlovem spletnem mestu. Popravljamo oziroma dodajamo lahko tudi html kodo, če npr. želimo postaviti tabelo na sredino ipd. Na spletno stran lahko vstavljamo tudi zemljevid (o naši lokaciji), Googlove dokumente, obrazce itd. Na Googlovem spletnem mestu lahko izdelamo in shranimo našo predlogo, ali pa izberemo že razpoložljivo Googlovo predlogo. Če želimo, da dijaki izdelajo oblikovno in vsebinsko primerno spletno stran za učno podjetje, potrebujemo ustrezen didaktični pristop. Le-ta mora omogočiti samostojno delo dijakov. To najlažje dosežemo, če za dijake izdelamo video-vodiče, ki prikazujejo izdelavo spletne strani na Googlovi spletni strani. V tem primeru učitelj samo pomaga dijaku pri izdelavi spletne strani, ko le-ta potrebuje pomoč.

Abstract: In this article, we will focus on making a website for practice firm with Google website. In Slovenia, we have practice firms for over a decade now. After reviewing the register of Slovenian practice firms, we can find out that only 18 % of Slovenian practice firms have their own websites and some of them don't work. We can make a good website with the Google websites. Website can have a suitable content and design regarding to our needs. When we create a website, we use buttons, which we have on the Google sites. We can repair or add the html code, if, for example, we want to set up the table in the middle of the site, etc. We can also insert maps about our location, Google documents, forms, etc. On the Google website we can make and save our own template or we choose the available template on Google. If we want that students make good websites for practice firms, we need a proper didactic approach. If teacher prepares video guides which show the students how they have to make the website on the Google website, they can make website independently. In this case teacher only helps students when they need a suggest.

Drevo v treh letnih časih

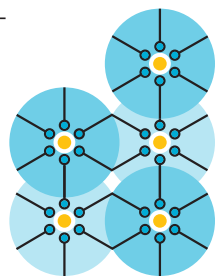
The tree in three seasons

Simona Zobec, Ivanka Federnsberg-Turinek • IV. osnovna šola Celje

Povzetek: Projektno delo z naslovom “Drevo v treh letnih časih” smo v preteklih letih izvedli pri pouku naravoslovja tako, da smo zbirali posamezne opazovalne liste (zabeležke) in jih vstavljali v mapo. V šolskem letu 2013/2014 pa zbirko zabeležk in zapise povratnih informacij vodimo v elektronski obliki v projektu EUfolio. Učenci v učnem okolju e-listovnika beležijo, rišejo in shranjujejo fotografije, ki nastajajo ob opazovanju izbranega drevesa skozi tri letne čase (jesen, zima, pomlad). Znanje naravoslovja bogatijo z uporabo IKT ter pri tem kritično prijateljujejo s sošolci in učitelji. Učenci na ta način spremljajo svoje delo, hkrati pa imajo možnost hitre povratne informacije, samovrednotenja in samoregulacije. Najprej so prejeli splošna pisna navodila za opazovanje izbranega drevesa skozi letne čase, nato pa so se seznanili z e-listovnikom, kar je bilo nekaterim učencem zelo blizu, drugim pa manj. Učenci, ki so tovrstno obliko z lahkoto osvojili in jo sprejeli z navdušenjem, so nudili pomoč sošolcem in tako postali soustvarjalci in sodelavci v projektu. V projektne delu so se srečali z izkustvenim učenjem, medpredmetnim povezovanjem, s timskim sodelovanjem, kritičnim prijateljevanjem, formativnim spremljanjem in samovrednotenjem. Učni cilji vsakega učenca so, da spozna značilnosti izbranega listnatega drevesa, razume spremembe skozi posamezne letne čase ter opazuje, analizira in vrednoti nastale spremembe. S pomočjo ozaveščenosti prepoznava bistvo dogajanja v naravi.

Izboru drevesa je sledila izdelava osebne izkaznice drevesa, tedensko opazovanje sprememb, sprotno beleženje, risanje, fotografiranje, vnašanje v učno okolje e-listovnika in vrednotenje lastnega dela.

Abstract: The project work “The Tree in Three Seasons” used to be conducted during natural science classes by collecting observation notes and putting them into folders. However, in the school year 2013/2014 the notes and feedback records are made electronically in the EUfolio project. In the e-portfolio learning platform, students note, draw and store photos they make during their observation of the selected tree throughout three seasons (autumn, winter and spring). They enrich their knowledge of natural sciences using IT and also form critical friendships with their classmates and teachers. In this way, students can follow their work, but also have the possibility for a quick feedback, self-evaluation and self-regulation. First, students were given general written instructions on how to observe their selected tree throughout the seasons. Then, they were shown how to work with the e-portfolio, which some students liked and others did not. The students who



adopted the form of work easily and were excited about it helped other students, thereby becoming the project's co-creators and collaborators.

Students' participation in the project acquainted them with experiential and cross-curricular learning, team work, critical friendship, formative assessment and self-evaluation. The learning goals of each student are to get acquainted with the characteristics of their selected tree, to understand the changes in different seasons and to observe, analyse and evaluate the changes that have occurred. Their awareness helps them recognize the principles of events happening in the nature. The selection of the tree was followed by making the tree's identity card, weekly observation of changes, continual note taking, drawing, photographing, entering data into the e-portfolio and evaluating one's own work.

Tudi jaz @prostovoljim – Uporaba družbenega omrežja Twitter v višješolskem programu

Organizator socialne mreže

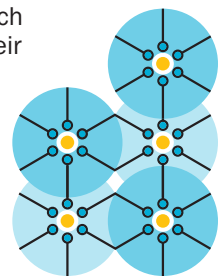
Tudi jaz @prostovoljim – The use of social network Twitter in the vocational college program for social network coordinator

Janja Rakovec • Višja strokovna šola, Šolski center Kranj

Povzetek: V izrednem višješolskem programu študente usmerjamo k samostojnemu izkustvenemu učenju v obliki sodelovanja z različnimi organizacijami. Sledenje njihovem delu, izmenjavo izkušenj in mnenj ter primerjavo med teorijo in prakso letos prvič izvajamo s pomočjo družbenega omrežja Twitter. Ustvarili smo skupen račun, prek katerega študenti v skladu s predmetom tvitajo o povezanih strokovnih temah, objavljajo svoje izkušnje ter predstavljajo različne projekte. Vsak od študentov za izbrano časovno obdobje prevzame vodenje računa in tvita v našem skupnem imenu, medtem ko ostali sledijo njegovim objavam.

Twitter smo izbrali zaradi preproste uporabe in znakovne omejitve sporočil, s čimer se med študenti spodbuja jasno in jedrnato izražanje, ki zahteva premislek in kreativnost. Dobro premišljeni tviti, ki sovpadajo s temo in znajo nagovoriti ostale, so s strani sledilcev tudi nagrajeni – v obliki njihovih komentarjev, razvite diskusije, deljenja in favoriziranja. Na ta način študent takoj dobi povratno informacijo o tem, kaj si njegovi sošolci o napisanem mislijo ter kakšne so njihove izkušnje ali mnenja. Sodeluje tudi predavateljica, ki diskusijo usmerja na povezano teoretično temo. Tovrstno učenje študentom omogoča aktivno participacijo pri izbiri učne vsebine in načinu posredovanja informacij, spodbuja k medvrstniškemu učenju in sodelovanju ter tako dodatno motivira pri učenju.

Abstract: In a vocational college program, part-time students are directed to experiential learning on their own through cooperation with various organizations. This year we started to use the social network Twitter to follow their work, exchange their experiences and opinions and their comparisons between theory and practice. We have created a joint account, through which students tweet on professional topics related to the study program, post their experiences and present a variety of projects. Each of the students takes over the account for the selected period of time and tweets under our common name, whilst others follow them.



We've chosen Twitter because of its simplicity of use and the short, limited message structure, thus promoting concise communication among students which requires reflection and creativity. Well thought-out tweets that are on topic, and know how to reach others, are rewarded by the followers in the form of comments, discussion development, shares and likes. This way, the students get immediate feedback on what they've written and what kind of experiences or opinions their classmates have about it. The professor also participates to ensure that the discussion stays focused on the program-related topics. This type of learning is motivational, it allows students to actively participate in choosing the course content and the methods of giving and receiving information, while encouraging peer-to-peer learning and collaboration.

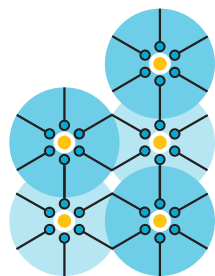
Kako najbolje izkoristiti čas v razredu, ko so učitelji in učenci skupaj

How to make better use of time when teachers and students are together in the classroom

Rafaela Kožlakar, Stanislava Polajžer,
Maja Vičič Krabonja • Gimnazija in srednja šola Rudolfa Maistra Kamnik
Breda Gruden, Bernarda Trstenjak • Miška d.o.o.
Viljenka Šavli • Srednja ekonomska šola Maribor

Povzetek: Zvrnjeno (flipped) učenje na svojstven način združuje učenje na daljavo in v živo. Učenec se z učno snovjo najprej sreča na daljavo: ogleda si in predela snov s pomočjo videoposnetkov in drugih gradiv, ki jih pripravi učitelj. Ko se učitelj in učenci skupaj srečajo pri pouku, pa poteka interakcija v obliki praktičnega dela, medsebojnega soustvarjanja, utrjevanja snovi, reševanja problemov itd. V praksi se je pokazalo, da je sodelovalno učenje učinkovitejše, saj podpira projektni, raziskovalni način dela in temelji na avtentičnih primerih. Poudarjena je medsebojna izmenjava izkušenj in informacij med učenci, učitelj pa prevzema aktivno vlogo mentorja. Prednost takega načina učenja je učencem prilagojen, personaliziran način dela na daljavo, ki ni vezan na čas in kraj učenja. To so učenci potrdili tudi v praksi. Pri pouku so učenci kot prednost izpostavili učiteljevo pomoč pri reševanju problemov in pojasnjevanju vprašanj o učni snovi ali postopkih dela. S takim učenjem učenci razvijajo kompetence 21. stoletja, predvsem pa odgovoren odnos do učenja, kar je popotnica za vseživljenjsko učenje. Na več šolah so "flipped" način učenja in poučevanja že preizkusili. Učiteljem je priprava takšne učne ure pravi izziv, učenci in dijaki so bili z aktivnim načinom dela zadovoljni.

Abstract: "Flipped" learning in its own way combines distance and live learning. Students come in touch with learning materials first at a distance: they process the learning content by watching the video lectures and other materials, prepared by the teacher. When the teacher and students meet together in the classroom, interaction in the form of practical work, mutual creation, consolidating materials, problem solving etc. on the topic takes place. Best practice learning has been demonstrated in collaborative work, which supports project, investigative mode of work and is based on authentic cases. In this process mutual exchange of experience and information between students is emphasized, while the teacher takes an active role of a mentor. The advantage of learning in this way is that it meets students' needs for personalised way of working at a distance, not bound to time or place



of learning. These facts have been confirmed in practice, too. Students have pointed out that it is an advantage to have their teacher available when they are solving problems or when they have questions regarding learning materials or working procedures. With this method of learning students develop 21st century competencies and, in particular, responsibility and attitude to learning, which is a foundation for their lifelong learning. The “flipped” learning and teaching has already been tested in several schools. It is quite a challenge for teachers to prepare such lessons, indeed, but pupils and students have been especially satisfied with such an active way of working.

Spletkova učilnica za obrnjeno učenje

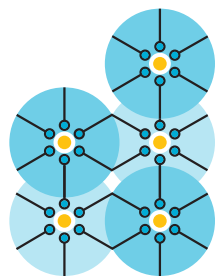
Weebly's classroom for flipped learning

Mojca Pozvek • Osnovna šola Koseze Ljubljana

Povzetek: To je e-učilnica, ki obrnjeno ali "flipped" učenje prenaša na mlajše osnovnošolce (tretji, četrti in peti razred osnovne šole). Oblikovno je učilnica prilagojena tej starostni stopnji – pri tem ne gre le za očem prijazno likovno opremo, pač pa predvsem za velikost črk oziroma zapisov na didaktičnem materialu v Spletkovi učilnici.

Pred vsako vsebino in nalogo so napisana tudi zelo jasna in nedvoumna navodila za aktiviranje predstavitev. Navodila so namenjena predvsem učencem, ki so računalniško slabše opismeni. Učenci razredne stopnje naj bi e-učilnico za tak način učenja obiskovali ob koncih tedna, ko niso obremenjeni z dodatnimi izvenšolskimi dejavnostmi in se lahko v polni meri posvetijo samostojnemu usvajanju nove učne snovi s pomočjo IKT. Primernost vsebine in nalog se odraža v uspešni povratni informaciji učitelju. Tak način učenja daje tudi na razredni stopnji šolskemu delu novo dimenzijo: snov se le utrjuje in nadgrajuje z dodatnimi informacijami. Pomemben pa je še en vidik takega učenja: učenci začnejo že zgodaj prevzemati odgovornost za lastno delo.

Abstract: Weebly's classroom for flipped learning (Slovene: Spletkova učilnica za obrnjeno učenje) is an e-classroom which provides flipped learning for younger students (the third, fourth and fifth classes of primary school). The classroom is designed for this particular age group. It does not contain only appealing artistic equipment but more importantly it ensures the appropriate font size on the didactic materials in the e-classroom. Before every topic and task, there are very clear and unambiguous instructions for the activation of presentation. The instructions are prepared especially for students who are not very skillful in terms of computers. Young students should visit the e-classroom for this type of learning at the weekends when they are free from additional extra-curricular activities and can completely devote to independent learning of a new school topic by the means of ICT. The adequacy of topics and tasks is reflected in a successful feedback given to the teacher. Such way of learning gives education in the lower-level classes of primary school a new dimension: school topics are refreshed and enriched with additional information. There is another important side of such way of learning – students start to take responsibility for their work at an early age.



EUfolio – Prvi koraki

EUfolio – First steps

Mitja Turk • Center biotehnike in turizma, Grm Novo mesto

Povzetek: Prispevek se osredotoča na predstavitev primera uporabe razvojnega e-listovnika pri pouku zgodovine. Predstavljeni primer učne ure “Država Aleksandra Velikega” služi kot osnova za (samo)evalvacijo drugega kroga izvajanja, spremljanja in vrednotenja poučevanja, ki vključuje uporabo e-listovnika (Mahara). Poleg prikaza priprave učitelja na izvajanje pouka s pomočjo e-listovnika, izvajanja v razredu in uporabljenega gradiva so predstavljeni tudi dosežki dijakov in njihova samoevalvacija. Prve ugotovitve kažejo, da se bo morala za uspešno uvedbo e-listovnika delno spremeniti vloga učitelja pri samem poučevanju, saj se pri takem načinu dela odgovornost za pridobivanje znanja vse bolj prenaša na dijaka. Pri tem je pomembna sprememba tudi bolj individualizirana obravnava dijakov, saj si ti zaradi različnega predznanja in predvsem interesov postavljajo zelo različne cilje. Pri uvajanju e-listovnika so se pojavljale različne ovire tako na tehničnem (Mahara) kot vsebinskem področju (rubrike formativnega spremljanja), ki smo jih sproti odpravljali.

Model razvojnega e-listovnika je prek rubrik formativnega spremljanja (cilji, predznanje, strategija, dokazi, samoevalvacija) preiščeno metodološko postavljen. Kot razvojni projekt pa je podvržen postopnemu uvajanju v šolski prostor, saj od učiteljev in dijakov terja premik v dojetanju obeh klasičnih vlog ter številne prilagoditve.

Abstract: The article focuses on the presentation of using e-portfolio in history lessons. The school lesson “Empire of Alexander the Great” is used as a case for (self-) evaluation of the second round of implementation, monitoring and evaluation of teaching which involves the use of e-portfolio (Mahara). Presentation includes teacher’s lesson plan, worksheet and activities in the classroom and also achievements of pupils and their self-evaluation. First findings indicate that the role of the teacher in the classroom has slightly changed. Furthermore, the responsibility for the acquisition of knowledge is increasingly transferred to the student. Another important change is more individualized approach to the students because they have different background knowledge, interests and goals. When introducing e-portfolio in the classroom we encountered various obstacles both from the technical (Mahara) and content area (rubrics formative assessment).

E-portfolio model is well-formed methodology of formative assessment (goals, pre-knowledge, strategy, evidence, self-evaluation). As a development project it is a subject of gradual introduction into schools because it requires a shift in the perception of both traditional roles of teacher and student as well as a number of adjustments in the learning process.

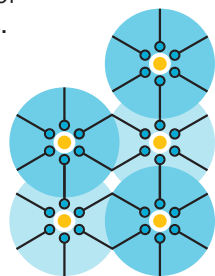
Uvajanje listovnika v okviru projekta EUfolio

Introducing portfolio within the project EUfolio

Suzana Cvirn Guček, Anka Novak Čehajić, Daniela Potochnik, Tone Krajnc •
Osnovna šola Mirana Jarca Ljubljana

Povzetek: Prispevek predstavlja začetke uvajanja listovnika v pouk pri slovenščini in angleščini v devetem razredu ter pri etiki in angleščini v sedmem razredu. Projektni tim Osnovne šole Mirana Jarca sestavljamo učiteljici angleščine Anka Novak Čehajić in Daniela Potochnik, učiteljica slovenščine Suzana Cvirn Guček in Tone Krajnc, učitelj domovinske in državljsanske kulture in etike. E-listovnik uporabljajo učenci 7. b in 9. b oddelka. Učenci se učijo odgovornosti do svojega dela in dosežkov in se zavedajo, da lahko z organiziranim načrtovanjem svoj uspeh izboljšajo. Učenci pri svojem delu uporabljajo orodje Mahara, v "mape" e-listovnika vnašajo dokumente, ki nastajajo ob učenju, ob tem pa razvijajo veščino komuniciranja in sodelovanja. Pri projektu učenci sodelujejo v manjših skupinah in utrjujejo ter preverjajo svoje znanje. S pomočjo konstruktivne kritike svojih kritičnih prijateljev izboljšujejo izdelke in pri tem postajajo bolj odgovorni do lastnega dela, do dela kritičnega prijatelja in skupine. V devetem razredu je v ospredju medpredmetno povezovanje pri angleščini in slovenščini. Predstavljene bodo konkretne naloge učencev.

Abstract: Our article presents the introduction of e-portfolio in Slovene and English classes in the 9th grade and English and Ethics classes in the 7th grade. The members of the project team of Elementary School Miran Jarc are English teachers Anka Novak Čehajić and Daniela Potochnik, Slovene teacher Suzana Cvirn Guček, and Ethics teacher Tone Krajnc. E-portfolio is used by the pupils in the 7. b and 9. b grade. The pupils learn how to be responsible towards their school work and achievements; they are aware that with an organized planning they can improve their school results. During their work they use Mahara learning tool, they attach their school work in their folders in Mahara and at the same time they develop communication and co-operation skills. In this project the pupils cooperate in smaller groups and revise and assess their knowledge. With the help of constructive feedback of their schoolmates they improve their work and become more responsible towards their own work, the work of their schoolmates and their group. In the 9th grade we put a lot of emphasis on cross-curricular integration at the Slovene and English classes. We will present a few tasks that the students have completed.



Spletno raziskovalno učenje robotike

On-line research learning of robotics

Andrej Koložvari • Osnovna šola Franceta Prešerna Kranj

Povzetek: Članek opisuje vlogo spleta v raziskovalnem učenju mlade interdisciplinarne vede robotike. Inteligentne naprave in tudi roboti se povezujejo v oblak. Model povezave robotske roke v svetovni splet vedno bolj nadomešča model zvezdaste povezave inteligentnih naprav in robotov v oblak. Rojstvo kiberfizičnih mehatronskih sistemov na novo opredeljuje informatiko, ki krmili mehanske premike aktuatorjev.

Opisali smo razvoj modela robota, ki ga želimo priključiti v oblak. Nov model ponuja odprto polje rešitev v izobraževanju in tudi drugje v naši družbi. Pri razvoju modela smo v učilnici uporabili množico spletnih storitev. Za izobraževanje in razvoj so tudi na področju robotike ključna elektronska gradiva objavljena na spletu. Le splet lahko podpira dinamično rastočo množico podatkov, ki spremlja hitri razvoj robotike. Spoznali smo, da nova tehnologija prinaša spremembe učnih metod, pripomočkov in gradiv.

Abstract: This article describes the role of the Internet in the educational process of young interdisciplinary science of robotics. Intelligent systems and robots are increasingly connecting to the cloud. Connection model of the robotic arm into World Wide Web is increasingly being replaced by the model of star connection of the intelligent devices and robots into the cloud. Birth of cyber-physical mechatronic systems redefines informatics controlling the mechanical movement of the actuators. We describe the development of a model of the robot that we wanted to connect to the cloud. The new model offers an open field solutions in education and elsewhere in our society. In developing the model in the classroom we used multiple Web services. Electronic materials published on the Internet are of key importance also in the field of education and development. Only the web can support dynamic growing volume of data that accompanies the rapid development of robotics. We recognize that new technology brings changes in teaching methods, devices and materials.

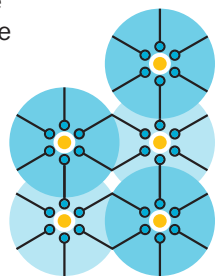
E-listovnik otroka kot izhodišče za načrtovanje tem in projektov v vrtcu

E-portfolio of the child as the starting point for the theme planning and project work in the kindergarten

Darija Hohnjec • Vrtec Rogaška Slatina

Povzetek: V slovenskih vrtcih segajo začetki oblikovanja listovnika otroka, instrumenta za spremljavo otrokovega napredka v razvoju in učenju, v leto 1999. V zadnjih letih se "klasičnemu" listovniku otroka, večinoma shranjenega v mapi, pridružil še e-listovnik. Sodobnejša oblika listovnika temelji na istih teoretičnih izhodiščih, vsebuje pa dokazila, ki so večinoma pridobljena in shranjena s pomočjo IK sredstev. Kot vzgojiteljica v vrtcu oblikujem in uporabljam listovnike otrok že petnajsto leto. Proučevanje in razlaga zbranih dokazil mi pomagata pri učinkovitejšemu poučevanju in učenju predšolskih otrok. Listovnik omogoča pridobivanje dodatnih informacij o načinih in učinkih otrokovega učenja: o teorijah, ki jih snuje, o interesih, problemih, strategijah učenja in zmožnosti sodelovanja s sovrstniki. Takšno spremljanje omogoča prepoznavanje in nadgradnjo njihovih močnih in šibkih področij, avtentični audio in video posnetki pa prispevajo k pogostejšim odzivom otrok. Listovniki otrok lahko služijo kot izhodišča smiselnega načrtovanja tem ter projektov v oddelku. Interese otrok, dokumentirane tudi v e-listovnikih, sem uporabila pri temi Načrtovanje naše nove igralnice. Načrte, ki so jih otroci risali prostoročno in v računalniškem programu Slikar, sem opremila z njihovimi pojasnili ter jih predložila vodstvu vrtca, da jih bo lahko uporabilo pri prenovi igralnice. IK sredstva so zabeležila bogato in pestro dogajanje in omogočila uvid v učenje in participacijo otrok pri tej temi.

Abstract: The child's portfolio has appeared in Slovenian preschool in 1999. During the last years the "classic" child's portfolio that mostly appeared in paper form, has been transformed in the e-portfolio. A modern child's portfolio is based on the same theoretical principles as before but contains evidence mostly obtained and saved with ICT. As a kindergarten teacher I have formed and used portfolios in my educational work for more than fifteen years. Analysis and interpretations of the collected evidence help me in effective teaching of young children. Portfolios provide additional information on the strategies and the effects of children's learning: about designing their theories, planning, interests, problems, social competences of participation with their peers, etc. Such monitoring allows



the identification and upgrading of child's strong and weak areas, authentic audio and video records contribute to more frequent evaluation of participants. Children's portfolios can also be used for a meaningful planning of activities. As example: designs of children documented in the e-portfolios were used in the project Designing of Our New Classroom. I added children's comments to their design ideas which were drawn by hands and by Painter program, and forwarded them to our headmaster. They will be taken into consideration in renovation of our new classroom. In this case ICT documents showed rich and diverse activities and allowed the teacher to get clearer insight into learning and participation of children.

Učenje geometrije z ali brez IKT?

Learning geometry with or without ICT?

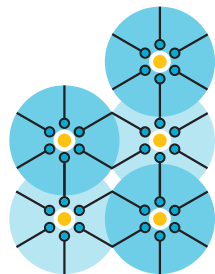
Silva Kmetič • Zavod RS za šolstvo

Tomaž Miholič • Osnovna šola Duplek

Vinko Zobec • Osnovna šola Poljčane

Povzetek: V načrtu pouka za razvoj pojma višina trikotnika v osnovni šoli smo vsebinske cilje iz učnega načrta dopolnili s splošnim ciljem pouka matematike: učenec razvija matematično mišljenje. Dodani korak dinamične shematizacije pa naj bi taksonomsko bogatil načrtovani dosežek učencev z vidika uporabe, razumevanja pojma in z vidika razumevanja matematične definicije. Uvajanje pojma smo načrtovali po van Hielejevi razvojni poti, ki smo jo dopolnili z dinamično shematizacijo. Prepletali smo dejavnosti s konkretnimi modeli, s konstruiranjem z geometrijskim orodjem na papir (rezultat so statične slike, simbolni in besedni opisi) in z raziskovanjem lege višin v dinamično spremenljivih trikotnikih. Opazovali smo proces učenja in merili napredek v znanju. Pri opazovanju učenja smo poleg že poznanih problemov, kot je nezanesljivost načrtovanja višine danemu trikotniku v odvisnosti od vrste trikotnika in lege osnovnice glede na rob delovne površine (lista), opazili še druge manj znane napačne predstave. Uspeh pri končnem preverjanju dosežkov učencev bi težko pripisali zgolj dodanemu koraku dinamične shematizacije, saj je k rezultatu prispevala vsaka od skrbno načrtovanih faz. Posebej pa smo preverili in kvalitativno analizirali cilj, v katerem učenci razvijejo “dinamični” pogled na geometrijo v povezavi z obravnavano temo. Rezultat kaže na nov učni korak pri uporabi programov dinamične geometrije, ki bi razvil pojma odvisnih in neodvisnih geometrijskih objektov.

Abstract: The plan of instructions for the development of the concept of altitude of a triangle in elementary school we completed content objectives from the national curriculum with the general objective of teaching mathematics: a student develops mathematical thinking. The additional steps of dynamic schematisation should be taxonomic enrichment of expected students' achievements in terms of use, understanding the concept and in terms of understanding the mathematical definition. The concept development was planned according to van Hiele scheme, which was supplemented with dynamic schematization. The activities with concrete models were intertwined with constructions using geometrical tools on paper (results are static images, symbolic and verbal descriptions), and with exploring a position of an altitude in dynamic changeable triangles. We observed the process of learning and measure progress of students' knowledge. When observing



learning, in addition to already known problems such as the uncertainty of the construction of altitude in a given triangle, depending on a type of triangle and depending on position of the triangle base with respect to the edge of the work surface (sheet), we have noticed also other less familiar misconceptions. The achievement on final testing would be hardly related just to the use of dynamic schematization, because it is a shared result of all carefully planned learning steps. We particularly tested and analyzed qualitatively students 'dynamic' view of the geometry in relation the topic. The result points to a necessary new learning step, which would develop the concepts of dependent and independent geometric objects in the use of dynamic geometry program.

Z GeoGebro na tablicah nad funkcije

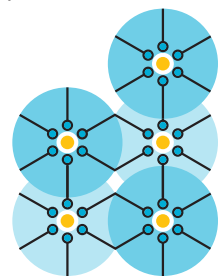
With GeoGebra on tablet computers over the functions

Simona Pustavrh •

Šolski center Novo mesto, Srednja elektro šola in tehniška gimnazija

Povzetek: Z vključitvijo v projekt Uvajanje in uporaba e-vsebin in e-storitev smo učitelji in dijaki drugega letnika tehniške gimnazije na Srednji elektro šoli in tehniški gimnaziji prejeli tablične računalnike, ki so se pri matematiki izkazali kot zelo uporabno učno orodje. Po začetnih težavah z uvajanjem tehnologije, ki smo jih uspešno premagali, dijaki tablične računalnike uporabljajo skoraj vsako učno uro. V prispevku bo prikazano, kako je novo učno orodje prineslo veliko spremembo v načinu poučevanja in učenja, saj so dijaki s sodelovalnim in preiskovalnim učenjem postali veliko bolj aktivni sodelovalci izobraževanja. Kljub temu je še vedno nadvse pomembna vloga učitelja, tokrat v vlogi mentorja. Največja uporabna vrednost tabličnih računalnikov se je izkazala pri preiskovanju funkcij z aplikacijo GeoGebra. Prikazane bodo tudi težave, ki smo jih uspešno rešili, in nekaj še nerešenih težav. Po mnenju učitelja in dijakov nov način dela prinaša bolj poglobljeno razumevanje funkcij in trajnejše znanje dijakov.

Abstract: Within the Introduction and Implementation of E-Learning Contents and Services Project, teachers and the second year students of technical gymnasium (Secondary School of Electrical Engineering and Technical Gymnasium) received tablets which have appeared to be a very useful Math teaching tool. After successfully overcoming initial technological difficulties, students are now more or less regularly using tablets in Math classes. The article will introduce the influence of a new teaching tool on teaching and learning methods. The students have namely been participating in the educational process more actively because of the collaborative and experiential (inquiry-based) learning. However, the teacher continues to have an important role in class, but mostly as a mentor. Tablets proved to be most useful in experiential inquiry-based learning of mathematical functions with GeoGebra application. The article will introduce difficulties which were successfully solved, and some difficulties which haven't been solved yet. Both, the teacher and students believe that using the new teaching tool in a class has resulted in more in-depth understanding of functions and lasting knowledge.



Razvoj digitalnih kompetenc pri delu z nadarjenimi učenci

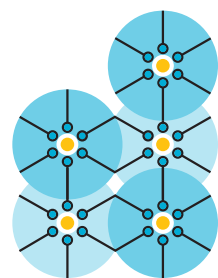
The development of digital competences with gifted pupils

Nela Bejat Krajnc, Bor Černek • Osnovna šola Pod goro Slovenske Konjice

Povzetek: Koncept dela z nadarjenimi učenci predlaga drugačen način poučevanja in dodatne aktivnosti učencev na njihovih močnih področjih, z upoštevanjem individualnosti ter osebnih interesov. V prispevku prikazujemo primer rabe elektronske učilnice kot prostora za razvoj digitalnih kompetenc učenca. Združili smo interes učenca za tuj jezik in rabo IKT. Učenec je imel v učilnici izvajalske pravice in je pod mentorstvom učitelja iskal in pripravljaval e-vsebine. Te so bile v povezavi s tekočo snovjo in v funkciji lažjega razumevanja snovi, utrjevanja, preverjanja in motivacije. Učenec je dodajal spletne povezave do dodatnih gradiv, vstavljal video posnetke in pripravljaval aktivnosti, s katerimi so učenci razvijali jezikovne veščine. Pri tem se je poglobljal v slovnicihna pravila, iskal in izbiral ustrezno besedišče ter najdeno nato preverjal in usklajeval z učiteljem – mentorjem. Učenec je poglobljal temeljno znanje v tujem jeziku in pri tem razvijal učne strategije z IKT, usmerjal lastno učenje in razvijal samostojnost ter odgovornost. Istočasno se je spremenila vloga učitelja, ki je namesto tradicionalnega podajanja učnih vsebin, postal mentor, ki omogoča učenčevu spletno raziskovanje in pridobivanje znanja, upoštevajoč njegovo individualnost in močna področja.

Abstract: The concept of work with gifted pupils suggests a different way of teaching and additional activities for pupils in order to develop their strong areas, taking into account the individuality and personal interests. This paper shows an example of the use of electronic classroom as a space for the development of digital competences of the learner. We have combined both learner's interests in a foreign language and the use of ICT. The pupil had a teacher's role in the classroom and he searched for e-materials, under the mentorship of a teacher. These were in connection to the current lessons and had a function to facilitate understanding of the content, revision, consolidation, and motivation. The learner added web links to additional materials, inserted video clips and prepared activities for other pupils to enable developing language skills. Thus, he has deepened his own awareness and knowledge of grammatical rules, chose relevant vocabulary and activities with the help and coordination of his teacher – mentor. The learner has broadened his knowledge of foreign language, while developing learning strategies with ICT, self-regulated his own

learning and developed independence and responsibility. At the same time the teacher's role has changed and shifted from traditional teaching style to becoming a mentor, who encourages the learner's on-line research and learning, taking into account his individuality, specific needs and talents.



S tabličnim računalnikom pri pouku likovne umetnosti ter tehnike in tehnologije

Tablet computers in the educational process of art and design and technology

Frančiška Hvalc • Osnovna šola Dobje

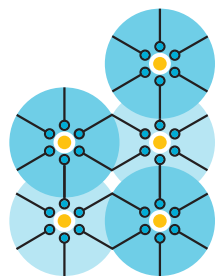
Povzetek: Predstavljam uporabo tabličnega računalnika pri pouku likovne umetnosti ter tehnike in tehnologije. Ob pričetku uporabe tabličnih računalnikov sem se vprašala, kako lahko njihova uporaba obogati pouk, kakšen je njen doprinos h kakovosti pouka, ali je znanje bolj ali vsaj enako kakovostno, o njenem vplivu na motivacijo učencev. Učenci so uporabljali tablični računalnik v različnih fazah pouka (motivacija, ponovitev snovi, usvajanje, utrjevanje, preverjanje, evalvacija). Predstavljam dva načina uporabe. Pri pouku tehnike in tehnologije so učenci z metodo sodelovalnega učenja (ekspertne in matične skupine) dopolnili snov o lesnih gradivih. S pomočjo tabličnega računalnika so dostopali do spletne učilnice šole, kjer so bila navodila za delo, učni list, povezave do učnih vsebin in do spletne učilnice z e-gradivi za tehniko in tehnologijo. Ob zaključku sodelovalnega učenja so učenci preverili usvojeno znanje o lesu s kvizom v spletni učilnici.

Pri likovni umetnosti smo usvajali novo snov Barvni odtenki s pomočjo tabličnega računalnika (Slikar), nato so si učenci v e-listovniku postavili cilje za rešitev likovnega problema, zapisali kakšno predznanje imajo, strategije, po končanem delu so izdelek fotografirali in ga evalvirali. Ugotavljam, da se je pri učencih aktivnost povečala in časovno podaljšala, kakovost znanja je bila enaka, pri nekaterih večja kot prej, med učenci se je povečalo sodelovanje.

Abstract: I present the use of tablet computers at Art and Design and Technology lessons. At the beginning of the use of tablet computers I asked myself how their use can enrich the lessons, what is the contribution to the quality of the lessons, is the knowledge of higher quality or at least the same, and about the impact of ICT on student's motivation. Pupils used the tablet computer in various stages of the educational process: motivation, checking back, assimilation, revision, testing and evaluation. I will present two ways of use. In the lessons of Design and Technology (an expert and a parent group), pupils have completed topics about wood materials with the method of cooperative learning. Tablet computers helped them access to the school's on-line classroom where they found instructions for work, worksheet, links to learning content and on-line classroom with e-materials for Design and

Technology. At the end of cooperative learning the pupils checked acquired knowledge with a quiz about wood in the on-line classroom.

In Art lesson pupils assimilated a new topic Colour shades using a tablet computer (Painter). After that pupils set goals to solve artistic problems in e-portfolio, wrote down what pre-knowledge they have, strategies and after work they photographed the product and evaluated it. I found out that the pupils' activity increased and prolonged in time, the quality of knowledge was the same, some pupils acquired even more knowledge, and the cooperation among pupils has increased.



Razvijanje kompetence učenje učenja z uporabo IKT

Development of the learning to learn competence with the use of ICT

Damjana Krivec Čarman •

Škofijska gimnazija Antona Martina Slomška Maribor

Povzetek: V posodobljenem učnem načrtu za predmet zgodovina v splošnih gimnazijah je predvideno vključevanje IKT v pouk zgodovine ter med drugim razvijanje digitalne kompetence. Med navedenimi kompetencami zasledimo tudi kompetenco učenje učenja. Kot učiteljica zgodovine prvega letnika gimnazije sem v letnem delovnem načrtu za prvi letnik kot prednostni cilj postavila razvijanje obeh kompetenc. V prispevku predstavljam sistematični pregled aktivnosti učitelja in dijaka za razvijanje obeh kompetenc ter spletnih orodij, ki sem jih vključila v izvajanje načrtovanega. Skozi zaključno evalvacijo opravljenega dela v dveh šolskih letih se je kot dodana vrednost izkazalo načrtovanje in izvajanje aktivnosti, ki omogočajo hkratno razvijanje obeh kompetenc. Tako bom v nadaljevanju predstavila konkretne primere učenja zgodovine skozi uporabo spletnih orodij, ki dijakom omogočijo razvijanje bralnih učnih strategij (strategija VŽN itd.), grafičnih organizatorjev (časovni trak, miselni vzorec itd.) ter učenje z risanjem. Evalvacija, opravljena med dijaki, je pokazala, da je uporaba spletnih orodij na področju motivacije dijakov za učenje učenja učinkovita in da hkrati pri dijakih omogoča njen razvoj.

Abstract: The article presents the students' and teacher's activities for a continuing development of the learning to learn competence in History lessons. The activities are aimed at the first year students of Grammar school and are based on developing reading strategies, graphic organizers and learning through drawing with the use of ICT technology.

b

Poučevanje • Teaching

Uporaba video kamere v vrtcu

The use of video camera in kindergarten

Dejan Čegovnik • MOJ TV d.o.o.

Bernarda Hvala • Vrtec Ledina Ljubljana

Povzetek: Prispevek bo prikazal možne načine uporabe video kamere in videa pri igri ter delu v predšolski vzgoji. Otroška kamera bo predstavljena kot igrača in orodje. Posnetki, ki si jih otroci ogledajo, jim pokažejo, kakšni v resnici so in kako jih vidijo drugi. Njegov nastop predstavlja objektivnega ocenjevalca.

Abstract: The contribution will show you possible ways to use video cameras and video playing and working in early childhood education. Children's camera will be presented as a toy and a tool. Recordings that kids see, show them what they really are and how they are perceived by others. His performance presents an objective evaluator.

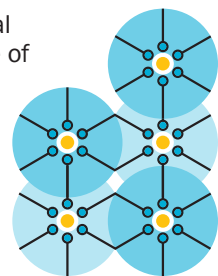
Začetno učenje jezika na daljavo

Distance Learning of Language for Beginners

Špela Bagon • Osnovna šola Vič Ljubljana

Povzetek: Na daljavo poučujem od leta 2012. Učenci iz ZDA se z učenjem slovenščine srečujejo prvič, zato pouk poteka v angleščini. Srečujemo se enkrat tedensko prek Skypa, ostalo delo poteka ločeno. Izkazalo se je, da začetno učenje jezika na daljavo predstavlja dvojen izziv: učenec in učitelj imata omejeno število srečanj v živo in učenec se srečuje z učenjem jezika prvič. Naše učenje se je precej izboljšalo, ko sem ugotovila, da moramo več pozornosti posvetiti samostojnemu učenju učencev doma, saj je srečanje enkrat na teden premalo. Poleg tega se čas, ki ga preživimo skupaj prek Skypa, ne razlikuje dosti od tradicionalnega pouka v učilnici. Učitelj ima pri tem na voljo različne učne pripomočke: učne liste, elektronske prosojnice, križanke itd., ki so prilagojeni za učenje z IKT. Pomembno je, da se posvetimo predvsem samostojnemu učenju učencev doma, zato jim sama pripravljam različna interaktivna gradiva, na primer video posnetek pogovora v slovenskem jeziku, zvočni posnetek slovenske pesmi, interaktivni kviz, posnetek slovenske glasbe, fotografije Slovenije na socialnem omrežju itd. Učenci se s pomočjo takšnega gradiva sami doma učijo slovenščino in spoznavajo slovensko kulturo. Dodana vrednost učenja na daljavo je torej omogočanje učencu prilagojeno samostojno multisenzorno učenje.

Abstract: I teach at a distance since 2012. Students from the United States are learning Slovenian language for the first time, therefore we have lessons in English. We meet once a week over Skype, the rest of the work is carried out separately. It turns out that learning language at a distance presents a double challenge: the students and the teacher have a limited number of meetings and the student is faced with learning language for the first time. Our learning has improved considerably when I realized that we need to pay more attention to students' independent learning at home, because meeting once a week is not enough. In addition, the time we spend together over Skype does not differ much from the traditional teaching in the classroom. The teacher can use worksheets, electronic slides, crossword, etc., which are adjusted to work with ICT. It is important to dedicate the independent student learning at home, so that's why I made various interactive materials, such as video conversation in Slovenian language, sound recording Slovenian songs, interactive quizzes, Slovenian music, Slovenian photos on social network, etc. Students using this material alone at home learn Slovene and about Slovenian culture. The added value of distance learning is this student selfadjusted multisensory learning.



(Ne)omejene možnosti poučevanja slovenščine na daljavo – Dopolnilni pouk slovenščine na daljavo

(Un)limited possibilities of a long distance teaching of Slovene language – On-line Slovene language class

Monika Kovačič • I. osnovna šola Žalec

Povzetek: Učilnica je “mesto” pretoka informacij med učencem in učiteljem, sodobna učilnica pa s sodobno tehnologijo učitelju in učencu omogoča učenje in poučevanje kljub dejanski fizični ločenosti. V prispevku je predstavljena IKT oprema v vlogi poučevanja na daljavo. Sodobna tehnologija pravzaprav omogoča neomejene možnosti uporabe v vlogi poučevanja na daljavo, hkrati pa se pri delu srečujemo tudi z nekaterimi omejitvami. Z nekaterimi primeri poučevanja na daljavo so predstavljeni drugačni pristopi poučevanja slovenščine, ki ga zahteva starost učencev in fizična ločenost učenca in učitelja. Pri dopolnilnem pouku slovenščine gre za pouk slovenščine za učence slovenskega porekla, ki živijo v tujini in želijo izgrajevati slovensko dediščino, kulturo in jezik.

Abstract: The classroom is a place where information flows between the teacher and the student. Modern classroom with modern technology enables the teacher and the student a teaching – learning process despite actual physical separation. In this article some alternatives of using ICT technology in distance teaching are presented. Modern technology actually enables unlimited possibilities of its usage in the distance learning. However in practice we come across some limits. Different teaching approaches with some examples of distance learning are presented. Those approaches are required by student's age and physical separation between the learner and the teacher. On-line Slovenian language class is designed for Slovene students who are living abroad and would like to continue the heritage of Slovenian culture and language.

Obrnjeno (flipped) učenje ter denarni fenomeni v angleščini

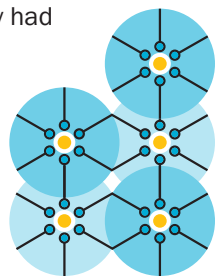
Flipped Learning and Money Phenomena in English

Margit Berlič Ferlinc, Maja Urlep • Srednja ekonomska šola Maribor

Povzetek: V prispevku bova obravnavali obrnjeno učenje pri timskem pouku, ki razvija ekonomsko strokovno terminologijo v tujem jeziku. Takšen način pouka smo izvedli v dveh paralelkah tretjega letnika ekonomske gimnazije.

Flipped/obrnjeno učenje in uvajanje angleščine v stroko zahteva določene spremembe in prilagoditve pouka. Za novo snov o inflaciji in deflaciji sva pripravili konferenčni posnetek, učni list za zapiske ob posnetku ter kviz v Moodleu (več rešitev) za preverjanje znanja. Dijaki so si ogledali posnetek doma, sprti reševali učni list ter čim bolje rešili kviz v spletni učilnici. Tako pripravljeni so pri dveh timskih urah znanje nadgradili z angleščino. Po ogledu risanke (vir: ECB) v angleščini so odgovarjali na kratka vprašanja, razumevanje snovi so preverjali z odvisniki in za domačo nalogo obnovili risanko o inflaciji v angleškem jeziku. Naslednjo uro smo snov utrjevali s pomočjo igre "Inflation Island" (vir: ECB) ter si ogledali posnetek o japonski deflaciji. Dijaki so ob tem vadili slušno razumevanje in ugotavljali pravilne/nepravilne trditve. Za evalvacijo so dijaki rešili spletni vprašalnik, v katerem so ocenjevali flipped/obrnjeno učenje in timski pouk ekonomije in angleščine. Večina dijakov je pozitivno ocenila novosti, le dijakom, ki imajo več problemov s tujim jezikom ali ekonomijo, takšen način učenja povzroča težave.

Abstract: We will deal with flipped learning at team teaching, which develops economic terminology in foreign language. We implemented such teaching/learning in two classes of the 3rd grade of high school of economics. Flipped learning and introducing of English in profession demand certain changes and adaptations of the teaching/learning process. We have prepared a conference recording about the new topic (inflation and deflation), a worksheet for notes when watching the recording, and a quiz in Moodle (with more possible solutions) for testing of knowledge and understanding. The students had been watching the recording at home, had been doing the worksheet at the same time and had been trying to do their best with the quiz in Moodle. Then they had two team teaching lessons and they upgraded the knowledge with English terminology. After watching a cartoon (the source: ECB) in English, they answered short questions, they checked their understanding with if-clauses exercises, and they wrote a reconstruction of the cartoon



about inflation in English for their homework. We practised the topic at the next lesson with the game “Inflation Island” (the source: ECB) and we watched a video about Japanese deflation (listening comprehension with true/false statements). The students did a web questionnaire for evaluation where they graded flipped learning and team lessons (Economy and English). Most of the students were positive about the novelty. However, such way of learning is a challenge for the students with problems with either Economy or English (or both).

Osnove programiranja z uporabo App inventorja in načel kombiniranega učenja

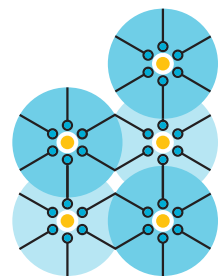
Computer Programming Basics with the Use of App Inventor and the Principles of Blended Learning

Boštjan Resinovič •

Šolski center Celje, Srednja šola za kemijo, elektrotehniko in računalništvo

Povzetek: Učenje osnov programiranja je sestavljeno iz učenja orodja za programiranje in učenja algoritmičnega mišljenja. Oba sta kompleksna, prvi zato, ker zahteva visoko stopnjo abstraktnega mišljenja in drugi zato, ker se mora začetnik hitro naučiti velikega števila pravil sintakse izbranega jezika. Poleg tega se lahko hitro pojavi še pomanjkanje motivacije, saj začetniki pišejo programe, ki so večinoma nekoristni in neatraktivni. Pričujoči prispevek nakazuje dve poti, po katerih lahko zgoraj omenjene težave zmanjšamo: prva zadeva starosti primerno izbiro programskega jezika, druga pa izbiro pedagoškega pristopa. Za populacijo srednješolcev, na katere se prispevek osredotoča, predlagamo poučevanje vizualnega programskega jezika App Inventor, za pedagoški pristop pa poučevanje po načelih kombiniranega učenja.

Abstract: Learning computer programming basics comprises learning a programming tool and learning computational thinking. They are both complex, the first because it requires a high level of abstract thinking and the second because the beginner has to learn numerous syntax rules of the chosen programming language. In addition, there's a risk of the lack of motivation, since beginners write mostly useless and unattractive programs. Two ways to lessen the aforementioned problems are indicated: a programming language appropriate for the students' age and a suitable pedagogical approach should be chosen. Since the paper focuses on high school students, teaching of the visual programming language App Inventor using principles of blended learning is proposed.



Od vrta do Facebooka – In kaj je vmes?

From garden to Facebook – And what's in between?

Urška Bučar • Osnovna šola Dolenjske Toplice

Povzetek: Mnenja o uporabi družabnih omrežij so med ljudmi različna. Če pa se lotiš uporabe Facebooka v drugem in tretjem razredu osnovne šole, kot je to v našem primeru, pa še toliko bolj. Vzrok tiči predvsem v varnosti osebnih podatkov ter objavljanju fotografij in mnenj. Kako smo se s problemom starosti in varnosti ob uporabi Facebooka soočili pri nas, bomo prikazali skozi lasten primer dobre prakse. Facebook smo uporabili v razredu z zaprto skupino, v katero smo vključili učence, starše, učitelje in lokalno okolje. Učenci delujejo prek računov svojih staršev. Podatke objavljamo zgolj z imeni, na fotografijah pa z ustreznimi programi zaščitimo obraze. Učenci tako izražajo svoja mnenja, objavljajo fotografije izdelkov in dela na šolskem vrtu. V skupini objavljamo napotke za delo, delimo praktične izkušnje, sprašujemo, odgovarjamo, sodelujemo s strokovnjaki, prirejamo dogodke. Skupina je aktivna že dve leti.

Abstract: Opinions on the use of social networks among people differ. However, if you take up the use of Facebook in the second and third grade of elementary school, as in our case, it is even more so. The cause lies primarily in the security of personal data and the publicity of the photos and reviews. How we faced the age and the security problem when using Facebook in our case, will be shown through our own example of good practice. Facebook was used in the classroom in the form of a closed group, in which only students, parents, teachers and the local representatives were involved. Students work through the Facebook accounts of their parents. All data presented is limited to only names and in the photos, however, face protection is provided with appropriate programs. Pupils express their opinions, post photos of their products and work in the school garden. In the group we publish guidance for the work, we share practical experiences, ask, answer, collaborate with experts and organize events. The group has been active for two years now.

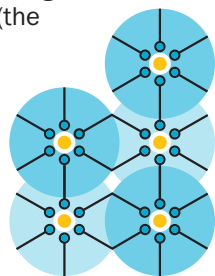
Tablica pri pouku: pomoč ali ovira

Using tablets in the classroom: advantage or obstacle

Nataša Jeras • Osnovna šola Šmartno pod Šmarno goro

Povzetek: Letošnje šolsko leto smo v okviru projekta Pilotni projekt uvajanja e-vsebin in e-storitev pri pouku začeli uporabljati tablice. Zanimalo me je, ali so tablice lahko pripomoček, ki ga lahko smiselno vključimo v pouk in s katerim lahko pouk obogatimo, ali pa so samo modna muha, ki nas pri učenju lahko celo ovirajo. Učenci četrtega razreda osnovne šole so zelo hitro osvojili osnove manipuliranja s tablico. Postavili smo jasna pravila glede uporabe, saj učenci pogosto enačijo IKT pripomočke z igranjem igrice. Preizkušali smo uporabo tablic pri različnih učnih strategijah: fotografiranje ali snemanje poskusov, snemanje dialogov, reševanje kvizov (aplikacija Brez knjige) kot preverjanje predznanja na začetku in ugotavljanja napredka na koncu ure, izdelovanje plakatov ali reševanje učnih listov ob iskanju ustreznih informacij v e-učbenikih, uporaba beležnice, kamor dopolnjujejo svoje zapise in jih lahko primerjajo in usklajujejo s sošolci, sprotno preverjanje znanja z aplikacijo Kliker, vrednotenje izdelkov sošolcev na forumu v spletni učilnici. S pomočjo tablice pouk lažje diferenciramo in ga prilagodimo posameznim učencem. Ugotovila sem, da tablice pri pouku nikakor niso ovira, so dober pripomoček pri različnih didaktičnih strategijah. Težko pa je v tej fazi že govoriti o tem, ali se z njihovo uporabo dviga tudi splošna raven znanja učencev.

Abstract: This school year we have started applying tablets in classroom use as a part of a national pilot project entitled Introducing e-learning contents and e-services. I was curious whether tablets can be a useful tool and can thus be effectively incorporated in classroom use or should they be regarded as another novelty which will eventually turn out to be an obstacle in the teaching process rather than its advantage. I have to admit that my 4th graders quickly got a grasp of basic tablet operations. We have set some clear rules regarding the way the tablets should be used since it is well-known that pupils tend to confuse ICT tools with gadgets which allow them to play games. I have used tablets with different learning strategies such as taking photos, recording experiments and dialogues, solving quizzes (using application Brez knjige). I have also used them for checking the pupils' progress during the lesson, making posters, solving worksheets (the students had to browse for specific information in e-student books), as a notepad (the students had to complete and compare notes with their classmates) or for regular progress checks using application Kliker. The pupils were also able to evaluate each other's assignments on Internet





forum in my interactive classroom. Using tablets in the classroom makes it much easier to differentiate the teaching process so that it suits the needs of individual pupils.

I have discovered that tablets are not an obstacle in any way but are rather a very helpful tool for promoting different learning strategies. However, at this stage of the project, it is premature to make assumptions that tablets generally raise the pupils level of knowledge.

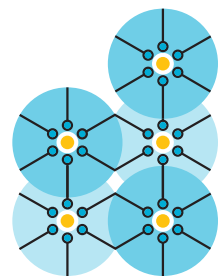
Raba tabličnega računalnika pri pouku v petem razredu

Using the tablet in the 5th grade classroom

Irena Gole • Osnovna šola Bršljin Novo mesto

Povzetek: Tablični računalnik je novost, ki jo lahko smotrno uporabimo pri pouku. S tem se spremeni učni proces in hkrati vloga učitelja, ki ni več samo podajalec informacij in absoluten vir znanja, temveč le vodi dejavnosti in učencem nudi tehnično podporo. V sklopu pilotnega projekta Uvajanje in uporaba e-vsebin in e-storitev v projektih E-šolska torba in E-učbeniki s poudarkom na naravoslovnih vsebinah v osnovnih šolah smo na Osnovni šoli Bršljin v pouk vpeljali tablični računalnik. Učencem smo omogočili, da sami z različnimi aplikacijami in pripomočki, ki jim jih ponuja tablični računalnik, odkrivajo in raziskujejo poti do znanja, ne da bi zapustili matične učilnice. Primeri dobre prakse nam kažejo, da lahko tablični računalnik uporabimo pri vseh predmetih, pri vseh etapah učenja, ne glede na to, ali gre za spoznavanje in usvajanje nove učne snovi ali pa za utrjevanje ter preverjanje znanja. Lažja je tudi evalvacija in analiza dela, saj tablični računalnik omogoča vrsto dejavnosti, ki pripravijo učenca, da razmišlja o svojem delu.

Abstract: The tablet is a novelty that can be used in teaching. By using it the teaching process as well as the role of the teacher is changed. The teacher is not only the person giving information and the absolute source of knowledge; he/she is also the leader of activities and the one who offers technical support to students. Primary school Bršljin is a part of the pilot project called Induction and application of e-contents and e-services in the projects e-Schoolbag and E-textbooks with emphasis on natural science contents in primary school. This participation involved the introduction of the tablets in the teaching practice. We enabled our students to discover and explore different ways of gathering knowledge, without leaving the classroom by using applications and accessories that are possible because of the tablets. Examples of good practice point out that the tablets can be used with all school subjects and at all learning stages, regardless whether it is assimilation, follow up or testing the knowledge. Evaluation and analysis of school work is also easier, as the tablet enables a series of activities that prepare the students to think about their work.



Prilagajanje dejavnosti v tretjem razredu učencem z motnjami branja in pisanja

Adaptation of activities in 3rd grade for pupils with reading and writing disorder

Anita Smole, Sonja Strgar • Osnovna šola Vide Pregarc Ljubljana

Povzetek: V prispevku predstavljamo primere dejavnosti, izvedene v tretjem razredu, ki so prilagojene značilnostim otrok z motnjo branja in pisanja. Dejavnosti smo z učenci izvedli pri rednih urah oziroma pri dopolnilnem pouku, primerne pa so tudi za izvajanje pri drugih oblikah pomoči kot predpriprava na obravnavo pri rednem pouku. Pri pripravi dejavnosti smo uporabili programe StoryboardThat (za podkrepitev besedila z ilustracijami), XMind (za pripravo miselnih vzorcev s ključnimi pojmi in bistvenimi podatki pri obravnavani snovi), PowerPoint (za pripravo vaj za utrjevanje tehnike branja), Quia (za pomoč pri urejanju zaporedja dogodkov), prav tako pa še storitev Google Drive (na ta način je učenec ves čas voden pri branju). Učenci so bili ves čas visoko motivirani za delo, čeprav je bila osrednja nit posamezne dejavnosti branje oziroma pisanje, kar pri ustavljenem načinu dela pogosto predstavlja veliko težav. Pri delu pa so bili tudi uspešnejši. Hkrati pa smo posredno razvijali tudi spretnosti, potrebne za digitalno pismenost.

Abstract: In this article we present case studies of activities in third grade that were adapted for children with reading and writing disorder. We executed these activities with pupils during regular and/or during supplementary lessons, however they're also suitable as a preparation for regular lessons. While preparing different activities we used several computer programs such as StoryboardThat (to support text with images), XMind (to create mind patterns with key concepts and data), PowerPoint (to prepare exercises for revising reading techniques), Quia (to help edit sequences of events), and Google Drive (to guide pupils while reading). Although reading and writing were in focus of individual activities, pupils were highly motivated for work, while usually that's a big obstacle if conventional teaching approach is applied. At the same time, we've also indirectly developed pupils' other skills necessary for digital literacy.

Ali se učenci znajo samostojno učiti s spletom?

Are children able to learn independently from Internet?

Anamarija Jeler • Osnovna šola Griže

Povzetek: Učenje poteka vse življenje, od rojstva naprej. V preteklosti je učenje v šoli pomenilo prepisovanje iz tabel v zvezek in "drilanje", tj. učenje učne snovi na pamet. V današnjem času pa se učenje v šoli spreminja. Zaradi svoje razširjenosti postaja uporaba sodobne tehnologije skoraj potreba, ki ob pravilni uporabi predstavlja zelo dober učni pripomoček.

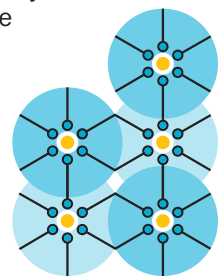
V prispevku sem opisala in prikazala primer samostojnega učenja z internetom v devetem razredu osnovne šole. Želela sem preveriti, ali znajo učenci sami poiskati informacije in na podlagi teh rešiti matematični problem. Pri tem sem jim zapisala vse cilje, ki jih morajo usvojiti, in vprašanja, na katera morajo odgovoriti.

Z izpeljano učno uro sem ugotovila, da učenci kljub vsakodnevni uporabi interneta in sodobnih tehnologij ne znajo uporabljati splet za samostojno učenje. Menim, da bi s spremembo učnega načrta učencem lahko omogočili uporabo tega kakovostnega vira podatkov, animacij, videov za samostojno učenje in ocenjevanje znanja, hkrati pa z izpopolnjevanjem trenutnih digitalnih kompetenc učiteljev dosegli njegovo večjo uporabo pri učiteljih.

Abstract: We are learning the whole life. In the past, learning in school meant copy from the school blackboard into notebook and study by heart. Nowadays, learning in school is changing. Using modern technologies is our need, because it is presented everywhere and is also very good technical accessory if is used correctly.

In this article I will describe and show an example how 14 years old students of primary school are able to learn independently from Internet. I wanted to check, if they are able to find correct information and based on that to solve mathematical problem. I wrote them all aims from the math curriculum and questions that they needed to answer.

With this kind of lesson, I determined that among every day use of modern technologies and Internet, students don't know how to critically and effectively use the Internet and its informations for learning. I think that we can change that so the children will be able to use the Internet as an excellent source for discovering new knowledge and learning, therefore we need to make some changes in our school curriculum, school assesment and to improve teachers digital competences.



E-listovnik v karierni orientaciji osnovnošolcev

Career guidance through e-portfolio in elementary school

Bojana Breznikar • Osnovna šola 8 talcev Logatec

Povzetek: Programske smernice za delo svetovalne službe v osnovni šoli določajo standard, da svetovalna služba izvede vsaj dve uri predavanj na temo karierni orientacije v dveh zaključnih razredih. Kakovosten proces odločanja za poklic pa temelji na dveh stebrih: zbiranju informacij o sistemu šolanja, o poklicih na eni strani ter dobrem poznavanju sebe – svojih interesov, sposobnosti, osebnostnih lastnosti in učnih navad na drugi strani. Zlasti dobro poznavanje sebe zahteva veliko več časa kot predvideni dve uri. Kako reševati opisano časovno zagato? V prispevku prikažem realno izvedljiv način umestitve ur karierni orientacije za osmi in deveti razred osnovne šole v ure pouka s pomočjo uporabe e-listovnika. Nadalje navajam prednosti in izzive uporabe e-listovnika. Prednosti tega orodja vidim predvsem v možnosti načrtovanja, spremljanja in samovrednotenja učencev v procesu samospoznavanja, v povečani možnosti dajanja povratnih informacij s strani šolske svetovalke, v poteku aktivnosti učencev v njim domačem okolju, dostopnosti, v prikazu praktične uporabe Europassa. Izziv pa je vsekakor didaktični prenos vsebin v e-okolje, pri čemer so omejitve predvsem v razvitosti IKT kompetence šolske svetovalke.

Abstract: Program guidelines for the work of advisory services in the elementary school set a standard that advisory service takes at least two hours of lectures on the topic of career guidance in the final two classes. Quality decision-making process for the profession is based on two pillars: on one hand, the collection of information on the system of education and the professions, and on the other hand, a self knowledge – their interests, abilities, personality traits, and learning habits. In particular, a good understanding of yourself requires a lot more than two hours. How to solve this time disharmony? In this article I introduce possible way how to include hours of career guidance into eighth and ninth class through the use of e-portfolio. Further, sets out the advantages and challenges of the use of e-portfolio. The advantages of this tool, in my opinion, are: the possibility of planning, monitoring and self-assessment of pupils in the process of self-discovery, the increased probability of feedback from the school counselor, accessibility, how to use Europass. The challenge: how to transfer didactic view of content in e-environment, with limitations in the degree of ICT competences of school counselor.

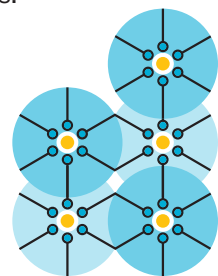
Pošiljanje rezultatov računalniško podprtih demonstracijskih meritev na mobilne naprave in njihova individualna obdelava

Sending computer assisted demonstration measurements results to mobile devices and their individual processing

Milenko Stiplovšek, Samo Božič, David Kimovec • Zavod RS za šolstvo

Povzetek: Vse slovenske gimnazije in več drugih srednjih šol ter nekaj osnovnih šol je opremljenih z opremo Vernier za izvajanje računalniško podprtih meritev. Trenutna opremljenost omogoča izvajanje demonstracijskih poskusov in prikaz izmerjenih vrednosti, frontalni prikaz obdelave izmerjenih vrednosti in delo v skupinah. Običajno imajo šole na voljo štiri do osem delovnih mest za izvajanje meritev in obdelavo merskih rezultatov pri pouku. Če želimo, da dijak sam obdela rezultate meritev, je v tem trenutku najpogostejši pristop pošiljanje merskih rezultatov dijakom (s pomočjo e-pošte, spletne učilnice ipd.) in nato kasnejša samostojna individualna obdelava teh rezultatov doma na PC-ju. Z vključevanjem mobilnih naprav v pouk (prenosnikov, tabličnih računalnikov, “pametnih” telefonov itd.) se je pojavila možnost, da izmerjene podatke obdela vsak dijak na svoji napravi pri pouku takoj po tem, ko smo podatke z demonstracijskim poskusom pridobili. Predstavljene bodo možnosti, ki jih za ta namen ponuja oprema Vernier in program LoggerPro. Najprej bodo predstavljene možnosti povezovanja mobilnih naprav z merilnim sistemom in s tem povezana varnostna tveganja. Nato bodo udeleženci povezali svoje mobilne naprave z merilnim sistemom. Prejeli bodo rezultate demonstracijskih meritev na svojo napravo in jih uporabili.

Abstract: All Slovenian grammar schools and many upper and lower secondary schools are equipped by Vernier in order to perform computer assisted measurements. The current situation allows demonstrating experiments as well as a frontal display of the processing of measured values and group work. Schools usually have four to eight working units where students are able to perform measurements and the processing of measurement results in class. If we expect students to process the measurement data on their own, we frequently send them the measurement data (via e-mail, virtual classroom, etc.) and then students use their own computers at home to process the data. Using mobile devices in class (laptops, tablets,



“smartphones”, etc.) enables students to process the data gathered by the experiments immediately after the experiment was carried out. We are going to present the possibilities offered by Vernier and LoggerPro programme. First the presentation will focus on different options which allow the connection between mobile devices and the measurement system bearing in mind the security risks. Then the participants will connect their mobile devices with the measurement system. They will receive the demonstration measurements results to their mobile device and will use them.

Uporabimo tablico, ko se splača

Using tablets when worthwhile

Nataša Kralj • Prva gimnazija Maribor

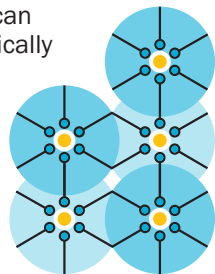
Povzetek: V uvodu prispevka so predstavljena nekatera izhodišča, ki se nanašajo na uporabo tabličnih računalnikov (v nadaljevanju tablic) pri pouku, ki pomembno vplivajo na odločitev, kdaj je le-te smiselno vključiti v pouk tujih jezikov in v katerem primeru njihova uporaba ne prinaša dodane vrednosti, morda tudi zaradi dejstva, da tablice primarno niso ustvarjene kot učni pripomoček v klasičnem smislu.

Elektronske medije (in z njimi tudi uporabo tablic) pa je treba vključevati v učni proces kontinuirano, in sicer takrat, ko le-ti nudijo podporo učnemu procesu, s tem ko omogočajo hiter in preprost dostop do aktualnih učnih vsebin, ki jih z njihovo uporabo lahko podamo bolj nazorno, interaktivno in na bolj sodoben način. Didaktično domišljena uporaba tablic omogoča in spodbuja avtonomno učenje, sodelovalno in timsko delo, učenje učenja, delo na daljavo in razvijanje digitalne zmožnosti ciljnih skupin.

Na osnovi kontinuiranega dela s tablicami pri pouku nemščine v športnem oddelku, ki tablice uporablja tudi pri večini ostalih predmetov, ugotavljam, da je za nemoteno delo s tablicami treba zagotoviti zanesljivo infrastrukturo in pripraviti ciljne skupine na uporabo le-teh pri pouku. Ko so dijaki seznanjeni s pravili uporabe tablic pri pouku, jih vsakodnevno tudi uporabljajo in spoznajo nekatere prednosti in omejitve le-teh, postane tablica tisti učni pripomoček, ki ciljne skupine dodatno motivira in jim olajša učenje. Ugotavljam tudi, da pomembno vlogo pri uvajanju tablic v učni proces igra sodelovalno učenje med dijaki in učitelji oziroma načelo, da več glav več ve.

Abstract: The introduction of this article presents some starting points, which apply to the use of tablet computers (hereinafter referred to as tablets) in the classroom, which significantly influence the decision on when it is reasonable to incorporate them in foreign language lessons and when their use does not enhance the learning process, possibly due to the fact that tablets were not primarily created as a learning tool in a traditional sense.

Electronic media – the use of tablets included – needs to be incorporated in the learning process continually and only when it provides support in the learning process by enabling fast and easy access to current learning topics, which can be given more clearly, interactively and in a more up-to-date fashion. Didactically deliberate use of tablets facilitates autonomous learning, collaboration and teamwork, learning to learn, distance learning and development of digital competence of target groups.



On the basis of continuative work with tablets in German language class in the sports department, which uses tablets in most of other subjects as well, I realized that it is essential to ensure a reliable infrastructure and prepare the target groups well in order to use tablets in the classroom without distractions. When students are acquainted with the rules of tablets' use in the classroom and they use them daily thus learning some of the benefits and downsides of tablets, a computer tablet becomes the learning tool, which provides additional motivation and makes learning easier for the target groups. I have also come to a conclusion that collaborative learning among students and teachers, or as the phrase 'two heads are better than one' suggests, plays a major role when introducing tablets in the learning process.

Kako začeti s poučevanjem programiranja

How to start teaching programming

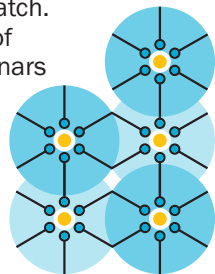
Matija Lokar • Fakulteta za matematiko in fiziko, Univerza v Ljubljani

Povzetek: V zadnjih letih so v večini razvitih družb prišli do spoznanja, da je nujno, da vsi učenci osvojijo algoritmično razmišljanje in znanje osnov programiranja. S spoznavanjem računalniških konceptov in razvijanjem postopkovnega načina razmišljanja učenci pridobivajo znanja, spretnosti in veščine, ki so veliko bolj trajne kot hitro razvijajoče se tehnologije.

Seveda pa je treba zelo skrbno razmisliti, kako začeti s poučevanjem programiranja – kateri so ustrezni prvi koraki. V prispevku bodo predstavljeni številni načini, ki jih lahko v ta namen uporabimo. Pri tem se bomo izognili standardnemu pristopu – problem, pisanje kode, prevajanje in izvajanje na računalniku. Ogledali si bomo poučevanje programskih konceptov brez uporabe računalnika in prek računalniških iger kot so Robozzle, LightBoot in podobne. Poudarili bomo, katere programske koncepte s tem spoznavamo. Poleg tega bomo videli, kako lahko izrabimo dejstvo, da so učenci navdušeni uporabniki mobilnih naprav in jih v okolju, podobnemu Scratchu, naučimo pisanja računalniških programov za mobilne telefone. Predstavili bomo določena gradiva, ki smo jih razvili na Fakulteti za matematiko in fiziko in so bila že uspešno uporabljena na seminarjih za učitelje.

Abstract: In recent years most developed societies have realized that it is essential for all the students to acquire algorithmic way of thinking and knowledge of the basics of programming. By learning about computer concepts and developing procedural way of thinking students acquire knowledge and skills that are much more durable than the rapidly evolving technology.

However, it should be considered very carefully how to begin teaching programming - what first steps are appropriate. The paper will present a number of ways that can serve. In doing so, we are avoiding the standard approach – a problem, writing the code, compiling and executing on a computer. We will see teaching programming concepts without the use of a computer and via computer games such as Robozzle, LightBoot and the like. We will highlight what software concepts are learned this way. In addition, we will see how the fact that students are avid users of mobile devices can be made use of, and how they can be taught to write software for mobile phones in an environment similar to Scratch. We will present a set of materials that have been developed at the Faculty of Mathematics and Physics and have already been successfully used in seminars for teachers.



Med prosojnicami in spletom

Between the Slides and the Web

Ksenija Bračič Bračko • Prva gimnazija Maribor

Povzetek: Med učne strategije sodi tudi organiziranje oziroma urejanje snovi v logično strukturo, da postane snov preglednejša in učencu pomaga pri razumevanju. V ta sklop tako sodi tudi izdelava zapiskov pri pouku. Pri tem sem opazila, da imajo dijaki s tem področjem organiziranja učenja velike težave:

1. zapiskov ne delajo, ker
 - a. ne zmorejo/znajo;
 - b. je lažje fotokopirati;
2. ob tem pa ne sledijo razlagi:
 - a. začnejo se dolgočasiti;
 - b. njihova pozornost pade;
 - c. motijo sošolce.

Zato sem želela preizkusiti nove strategije in ob prosojnicah ter razlagi učencem ponuditi nekaj, kar jih bo pritegnilo. Pri delu sem uporabila razpoložljivo IKT tehnologijo – standardne računalnike in tablice ter jim ponudila možnost, da ustvarijo e-zapiske.

Uporabila sem že izdelane prosojnice in spletno orodje 1ka, s katerim sem naredila kviz za pridobivanje nove učne snovi. Učenci so morali slediti prosojnicam in moji razlagi, če so želeli odgovoriti na vprašanja, ki so z odgovori tvorila smiselno celoto. Prosojnice in kviz niso bili identični, zato so morali učenci pozorno spremljati razlago in tabelno sliko ter odgovarjati na vprašanja. Vprašanja so bila različnih tipov in taksonomskih ravni. Vključila sem slikovno gradivo ter povezave na vire v spletu.

Na koncu sem posamezne kvize izvozila v Word-ove dokumente ter jih poslala učencem. Oblika dokumenta je učencem dopustila možnost oblikovanja in dopolnjevanja zapiskov po lastnih željah.

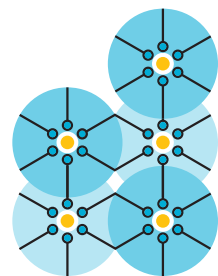
Abstract: Among learning strategies we also include an organization or arrangement of subject matter in a logical structure which makes it more transparent and understandable for a student. This cluster also includes taking notes in class and this is where I noticed that students have a lot of problems with this part of learning organization:

1. they do not take notes because
 - a. they are not able to/do not know how;
 - b. it is easier to copy;
2. and during this they do not follow the lecture:
 - a. they get bored;
 - b. their attention starts declining;
 - c. they disturb their classmates.

That is why I wanted to try out some new strategies and, alongside slides and lectures, offer the students something that will grab their attention. During the work process, I used the available ICT (standard computers and tablets) and offered the students a chance to create e-notes.

Moreover, I used ready-made slides and an on-line tool 1KA with which I created a quiz for acquisition of a new subject matter. To answer the questions and make a coherent whole, the students were required to follow the slides and my lecture. Furthermore, the slides and the quiz were not identical so the students had to carefully listen to the lecture, follow the blackboard drawings and answer the questions. The latter were of various types and taxonomic levels. I also included visual material and links to web resources.

At the end, I exported individual quizzes to Word documents and forwarded them to the students. The form of document allowed the students to edit and supplement the notes according to their wishes.



Spremljavo pouka – Kako učenci/dijaki uporabljajo tablične računalnike?

Monitoring instructions – How learners use tablets?

Samo Božič • Zavod RS za šolstvo, OE Nova Gorica

Povzetek: V prispevku bomo prikazali, kako pogosto so se učitelji odločali za uporabo e-učbenika, spletne učilnice, socialnih omrežij, preverjanje znanja z IKT ipd. Zavod RS za šolstvo opravlja spremljavo na šolah, ki so vključene v projekt Uvajanje in uporaba e-vsebin in e-storitev. Svetovalci smo v drugem obdobju spremljanja pouka, od decembra 2013 do januarja 2014, med drugim ugotavljali, kako učitelji uporabljajo IKT naprave in kako učenci oziroma dijaki uporabljajo tablične računalnike. Različne načine uporabe IKT tehnologije v razredu smo določali iz dveh baz podatkov, to je zapisov svetovalcev s spremljave in zapisov v sprotnih pripravah učiteljev. Načine uporabe smo združevali v 14 kategorij dejavnosti učitelja in 16 kategorij dejavnosti učencev. Pri analizi smo uporabili malenkostno prirejeno klasifikacijo, ki je bila prvič objavljena v Dodatnih smernicah in didaktičnih napotkih za smiselno vključevanje IKT v pouk fizike.

Abstract: In this presentation we aim to show how often teachers decided to use the e-textbook, learning management system, social networks, assessment of knowledge with ICT, etc. The National Education Institute carries out monitoring of schools involved in the project Introduction and use of e-content and e-services. In the second period of monitoring instruction, from December 2013 till January 2014, we tried to determine, among other things, how teachers use ICT devices and how learners use tablets. We determined different ways of using ICT technology based on two data bases, that is observers' records and teachers' lesson plans. The ways teachers use ICT are represented in 14 categories while the students' use is represented in 16 categories. For the analysis a slightly modified classification which was first used in a document Additional guidelines and didactic guidelines for a meaningful integration of ICT in teaching physics was used.



Vrednotenje • Assessment

Šport skozi Nikine oči

Sport through Nika's eyes

Danijela Ledinek, Nika Grešovnik • Osnovna šola Podgorje pri Slovenj Gradcu

Povzetek: Kot učiteljica športa ugotavljam, da je kljub dejstvu, da v procesu poučevanja in vrednotenja znanja upoštevam tudi predznanje učencev, njihovo končno znanje velikokrat drugačno od načrtovanih ciljev. Zavedanje, da imajo pri razvijanju in vrednotenju znanja pomembno vlogo tudi učiteljeva ravnanja, me je spodbudilo k ideji, da učencem ponudim drugačen učni pristop. Vse več je namreč otrok, ki kljub trudu iz različnih razlogov niso najbolj uspešni oziroma prepričljivi na gibalnem področju, imajo pa številna druga znanja, sposobnosti in veščine, ki lahko pripomorejo k razumevanju in kakovosti znanja o pomenu športa za življenje.

S kratkim filmom, ki ga je izdelala učenka, kot možnost izkazovanja znanja želimo prikazati, kako lahko v učencu vzbudimo željo po odkrivanju, raziskovanju in ustvarjanju ter kako pri pouku spodbujati in motivirati, da bomo lažje dosegli zastavljeni cilj. Film z naslovom "Ko sanje postanejo resničnost" smo ustvarili s programsko opremo Pinnacle Studio. To je film, ki nas bo ponesel v najbolj tipična obdobja zgodovine športa skozi oči mladostnika, ki sprejema svet drugače, kot ga sprejemajo naše generacije. Tehnologija, ki smo jo ob tem uporabili, je ob besedah Aristotela (2010) drugotnega pomena: "Da lahko nekaj poimenujemo znanje, mora osvobajati, mora odpirati nove svetove, nove horizonte, mora prispevati k večji morali in intelektualni odličnosti." S filmom smo odprli nove svetove in se pri tem medpredmetno povezali.

Abstract: As a teacher of Physical education I am finding out that despite the fact that during the process of teaching and evaluating knowledge, I also consider the prior knowledge of students, their final knowledge is many times different from intended goals. Awareness, that within the development and evaluating knowledge, teacher's conducts also have an important role, has inspired me to the idea to offer my students a completely different approach.

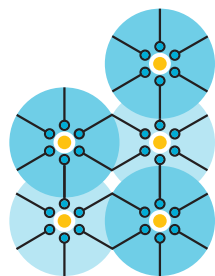
There are more and more children, who are, despite their effort, from various reasons not very successful or convincing in their motor skills area, but they have different knowledge, competence and skills, which can all aid in the understanding and quality of knowledge about the meaning of sport in one's life.

With this film, made by one of my students as a potential display of knowledge, we want to show how it is possible to awake student's desire to discover, research and create as well as how to encourage and motivate within a lesson in order to achieve a worked-out goal easier.

Film entitled “When dreams become a reality” was created with the Pinnacle Studio programming equipment. This film will take us through the most typical periods of the history of sport, through the viewpoint of an adolescent who accepts the world differently as our generations did.

The technology used in the process is, with the words of Aristotel (2010), of only a secondary importance: “In order to name something knowledge, it needs to establish new worlds, new horizons, it needs to contribute to a higher ethics as well as intellectual excellence.”

With this film we have opened up new worlds of cross-curricular integration.



E-listovnik v funkciji formativnega spremljanja veščine sodelovanja in komuniciranja pri pouku psihologije

E-portfolio as a tool for formative assessment of cooperation and communication skills in psychology classes

Jasna Vuradin Popovič • Gimnazija Murska Sobota
Tanja Rupnik Vec • Zavod RS za šolstvo

Povzetek: V prispevku prikažemo, kako smo s pomočjo e-listovnika vpeljali spremljanje v podporo učenju (formativno spremljanje) sodelovanja in komuniciranja ter poglobljenega razumevanja tematskega sklopa Čustva. Prikazani so vsi koraki formativnega spremljanja, od ugotavljanja predznanja, prek oblikovanja osebnih ciljev, načrtovanja strategije uresničitve ciljev, opredelitve kriterijev uspeha, do povratne informacije in samoevalvacije ter razna orodja, ki smo jih pri tem uporabili.

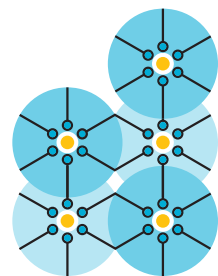
Kot temeljno orodje za oblikovanje e-listovnika smo uporabili spletno aplikacijo Mahara. Učence smo usmerili v vrsto dejavnosti, v katerih so svoje delo načrtovali, spremljali in vrednotili v skladu z navodili zavijka Moje učenje v spletnem okolju Mahara. Učenci so v dejavnostih prešli vse faze raziskovanja, od orientiranja v učni vsebini, prek konstruiranja znanja, ter kasneje poglobljanja in vrednotenja, do evalvacije.

E-listovnik smo uporabili v dveh funkcijah, kot osebni prostor samouravnavanja učenja ter kot prostor skupnega raziskovanja ter širjenja in poglobljanja znanja obravnavane tematike. Prikazu posameznih dejavnosti in poteka dela v Mahari in drugih aplikacijah sledi prikaz dosežkov učenk in učencev ter predstavitev rezultatov evalvacije, ki kažejo v prid smiselnosti nadaljevanja uporabe e-listovnika v obeh funkcijah tudi za obravnavo drugih tematskih sklopov. Učenci so namreč učiteljici podali pozitivno povratno informacijo glede uporabe Mahare za namene načrtovanja lastne prakse, kot tudi za namene sodelovalnega raziskovanja in učenja obravnavane teme.

Abstract: This article shows e-portfolio introduced assessment in learning support (formative assessment) of cooperation and communication as well as deepened understanding of topic complex Feelings. Presented are all steps of formative assessment, from pre-knowledge assessment through personal goals formation, planning the strategy to goals realisation, defining success criteria,

return information and self-evaluation, as well as different tools being used. As the basic tool for the formation of e-portfolio we used Mahara web application. Students were directed into various activities to plan their work, follow and evaluate it according to the instructions in the fold My learning in the Mahara web environment. Students passed all the phases of research, from orientation in the learning context through knowledge construction, and afterwards deepening and assessment, to evaluation.

E-portfolio was used in two functions, as personal space for learning self-direction, as well as the space for common research and widening and deepening of knowledge on the studied topic (topic complex Feelings). After the presentation of individual activities and working process in Mahara and other applications, follows the presentation of the students' achievements and the presentation of the evaluation results which show the advantage in using e-portfolio in both functions for studying other topics. The students have given a positive feedback to their teacher on the use of Mahara for the means of planning their own praxis as well as for cooperative research and learning the topic studied.



Dijaku prijazno skupinsko ocenjevanje znanja ob podpori e-listovnika

Student-friendly group assessment of knowledge with the support of e-portfolio

Tina Petkovšek • Srednja šola za farmacijo, kozmetiko in zdravstvo Ljubljana

Povzetek: Skupinsko ocenjevanje znanja želim predstaviti kot način pridobitve ene izmed ocen pri pouku in dobro sredstvo za motiviranje dijakov. E-listovnik kot orodje pri tem omogoča izpeljavo, obenem pa s svojim načinom dela sledim filozofiji e-listovnika, torej da dijaki razvijajo samoregulacijo.

Moj namen je opogumiti ostale učitelje za vpeljavo drugačnih praks ocenjevanja, ko en test rešujejo po trije dijaki. Novost ni le v skupinskem izpolnjevanju testne pole, ampak tudi v dijakovem lastnem načrtovanju učenja ter ustvarjanju skupin (razvrščajo se glede na lastne aspiracije) in prevzemanju odgovornosti za lasten uspeh, ki tako postane odgovornost za uspeh skupine. Dijake s tem želim tudi usmeriti, da fokus ni ocena, ampak znanje samo. Pri klasičnem ocenjevanju je za večino dijakov ocena bistvenega pomena, tako za popravo niso več motivirani. Sama pri svojem delu dijake usmerjam v znanje in tako je poprava testa ključnega pomena, ki jo nadgradijo tudi s pisanjem refleksije v e-listovniku.

Testna pola je zasnovana problemsko in preverja višje ravni znanja po Bloomovi taksonomiji. Pogosto so odgovori med člani skupine različni in se o zapisanem odgovoru usklajujejo ter medsebojno argumentirajo. Marsikateri dijak šele ob tem popolnoma osvoji in razume snov – tako se učijo drug od drugega. Obenem dijaki urijo tudi komunikacijske in socialne veščine, ocenjevanje pa poteka v bistveno manj stresnem vzdušju. Po pisanju testa imajo možnost izmenjevati mnenja o pravih rešitvah v okolju Mahare. Popravo naredijo na naslednji učni uri prav tako skupinsko. Vsak dijak zase pa zapiše tudi lastno refleksijo o izkušnji in jo vstavi v e-listovnik.

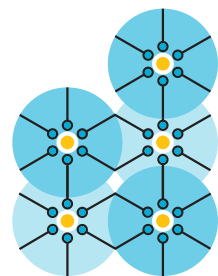
Abstract: I would like to present group assessment as a way of getting one of the grades in class and a good means of motivating students. E-portfolio as a tool here enables execution and at the same time I follow the philosophy of e-portfolio with my own methods of work, namely that students plan learning, take the responsibility for their own success and reflect their learning.

My intention is to encourage other teachers to introduce different assessment practices. What is new here is not only solving the test sheets as a group of three students, but also the student's own planning of learning and creating groups (they group according to their own aspirations), self-regulation, taking

responsibility for their own success, which in this way becomes responsibility for the whole group.

I want to direct my students that the focus is not the grade but the knowledge itself. In classical assessment the grade is of essential importance with the majority of students, thus they lose motivation for the correction of the test. At my work I orientate my students to knowledge and thus the correction of the test is crucial, which they upgrade with their own reflection in e-portfolio.

The test sheet is problem-projected and checks higher levels of knowledge according to Bloom's taxonomy. Very often the answers among the members of a group are different and they harmonize and dispute about them. Many students master and understand the subject matter not earlier than now. In this way they learn from each other. After the test, they can exchange their opinions about the correct answers in Mahara. They make the correction in the following lesson, again as a group. Each student writes down their own reflection and attaches it to the e-portfolio.



Načrtovanje, izvedba in vrednotenje dramatizacije mitološke zgodbe ob podpori IKT tehnologije

Planning, implementation and evaluation of dramatization of the mythical story in the support of it technology

Nataša Plevnik, Danijela Radjen • Osnovna šola Globoko

Povzetek: Sodobni didaktični pristopi postavljajo učenca v položaj aktivnega sooblikovalca pouka, ki sodeluje pri načrtovanju, izvajanju in vrednotenju tematskega sklopa. Vse se dogaja okoli osrednjega problema, ki se ga učenci lotevajo na podlagi svojega predznanja, izkušenj, individualnih pričakovanj in sposobnosti. Učitelj je mentor, ki usmerja in koordinira pouk, je aktivni opazovalec, ki spremlja napredek učenca in pomaga učencu napredovati. Pomembno vlogo dobivajo različna e-orodja, naj bodo to informacije na spletu, e-učilnice ali e-naprave, s katerimi posredujemo informacije.

Učitelju elementi formativnega spremljanja pomenijo okvir, v katerem lahko skupaj z učencem sooblikuje korake dela. Ti koraki dela so naravnani na individualne zmožnosti učencev. Učitelj lažje udejanja elemente diferenciacije in individualizacije. Če te korake postavimo v virtualno okolje, kot je elektronski zvezek ali e-listovnik, je individualen pristop učenca k raziskovanju problema še močnejše omogočen in učenec je dodatno motiviran z možnostjo uporabe IKT tehnologije.

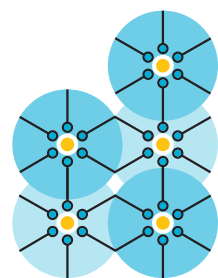
Prispevek prikazuje, kako lahko pri pouku združujemo elemente formativnega spremljanja, sodelovanja, komunikacije, ustvarjalnosti in IKT tehnologije. Učenec pridobiva znanje in veščine na individualen način ob podpori učne skupine in e-orodij.

Ugotovili smo, da so bili učenci bolj motivirani za delo, saj so se počutili kot aktivni sooblikovalci pouka. Svoje delo so samovrednotili in ga nadgrajevali.

Abstract: Current didactical methods place a pupil in a position of active co-creator in the teaching process, which participates in the planning, implementation and evaluation of the selected thematic unit. Everything happens around the central problem, which is based on pupil's prior knowledge, experience, individual expectations and ability. The teacher becomes a mentor who directs and coordinates lessons, he is an active observer that monitors pupil's advancement and helps him progress. Various e-tools, such as information on the web, e-classroom or e-devices for transmitting the information play an important role.

Elements of formative assessment mean to the teacher a framework within which he together with the students shapes the work steps that are oriented to the individual pupil's abilities. Teacher implements elements of differentiation and individuation easier. If these steps are placed into a virtual environment, such as an electronic notebook or e-portfolio an individual approach to research the problem is enabled even more and the pupil is additionally motivated with the possibility of the use of IT technologies.

The contribution demonstrates how the lessons combine elements of formative assessment, collaboration, communication, creativity and IT technologies. The pupil acquires the knowledge and skills individually with the support of learning groups and e-tools. We found out that pupils were more motivated because they were active co-constructors of lessons. Their work has been self-evaluated and upgraded.



Različni pogledi na e-listovnik in njegova vloga v procesu učenja

Different views on e-portfolio and its role in the learning process

Leonida Novak, Ada Holcar Brunauer • Zavod RS za šolstvo

Povzetek: Namen prispevka je predstaviti možnosti vključevanja e-listovnika v pouk, ki je dinamičen in ki predstavlja za učenca izziv, saj ga postavlja v aktivno vlogo, obenem pa omogoča spremljanje napredka učenca, kjer ključno vlogo odigra učiteljeva povratna informacija v procesu učenja.

V prispevku bo predstavljen e-listovnik v luči dveh šolskih sistemov: slovenskega in škotskega. V prvem gre za uvajanje razvojnega e-listovnika v šolsko prakso in v za t.i profil učenca. Povezovalni element obeh sistemov pa so elementi formativnega spremljanja, ki se v slovenskem šolskem prostoru počasi uveljavljajo, v škotskem pa so temeljna doktrina učenja in poučevanja. Ključni poudarek prispevka se kaže v stalnem opozarjanju na potrebo po večjem pomenu e-listovnika v procesu izobraževanja učenca, ki naj ima tako vrednotenjsko kot odnosno funkcijo, obenem pa naj učitelju predstavlja dodano vrednost in ne oviro.

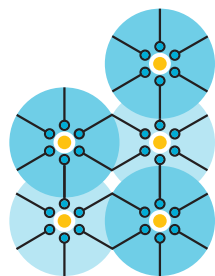
Temeljni poudarki predstavljenega prispevka bodo sledeči: e-listovnik kot dokumentiran proces učenja, poučevanja in dosežkov, primer e-listovnika učenca v slovenski in škotski osnovni šoli in njuni funkciji, možnosti za razvoj e-listovnika in krepitev njegove vrednosti v šolskem sistemu ter avtonomno odločanje učitelja o uvajanju e-listovnika v poučevanje.

Abstract: The purpose of this paper is to present the possibilities of integrating e-portfolio in everyday classroom practice. This is a dynamic and challenging process for the learner because it puts him/her into an active role. It is supported by the monitoring of learner's progress, where teacher's feedback plays the key role in the learning process.

This paper presents an e-portfolio in the light of two school systems: the Slovenian and the Scottish. In the first one the developmental e-portfolio has been implemented into school practice, and in the second one there is a greater emphasis on student's profile. The connecting elements of both systems are the elements of formative assessment, which have lately been implemented in Slovenian schools, while on the other hand they present the fundamental doctrine of teaching and learning in Scotland. The key focus of this paper is to address the need of giving greater importance to the e-portfolio

in pupils' education, which has, besides an evaluative, also a relational function, being beneficial for the teacher.

The basic elements, which will be presented at the conference, are the following: e-portfolio as a documented process of learning, teaching and pupils' achievements, such as e-portfolio of a learner in Slovenian and Scottish primary school, further possibilities of the development of the e-portfolio enhancing its value in the school system, and enabling teachers for autonomous decision making when introducing the e-portfolio in their classrooms.



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Prostor in podpora • Space and support

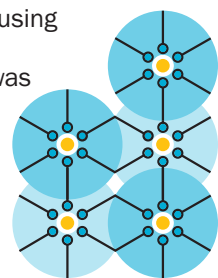
Digitalne kompetence pri učiteljih razrednega pouka

Digital competences by primary school teachers

Tine Pajk • Osnovna šola Muta

Povzetek: Prispevek predstavlja spremljanje digitalnih kompetenc od leta 2012 do leta 2014 pri učiteljih razrednega pouka. Spremljanje digitalnih kompetenc temelji na spletnem anketnem vprašalniku, ki so ga rešili učitelji razrednega pouka. Spletno anketo smo razdelili na dva dela. Prvi del je obsegal demografske značilnosti anketirancev (spol, starost, delovna doba, izobrazba, naziv, regija poučevanja, število prebivalcev, kjer učitelji poučujejo). Drugi del je zajemal digitalne kompetence učiteljev razrednega pouka. Zanimalo nas je, katero strojno in programsko opremo (slovenščina, matematika in spoznavanje okolja) uporabljajo pri pouku, s katerimi virtualnimi okolji vzpostavljajo komunikacijo in sodelujejo s širšo javnostjo, koliko ur na teden uporabljajo svetovni splet kot vir podatkov in informacij in ga vključujejo v pouk, koliko ur na teden uporabljajo informacijsko-komunikacijsko tehnologijo (nadalje IKT) za utrjevanje, ponavljanje in pridobivanje učne snovi, katere so morebitne nevarnosti oziroma zlorabe otrok in mladih pri uporabi spletnih in mobilnih tehnologij, ocena pri izdelavi, posodobitvi in objavi e-gradiva in zakaj učitelji uporabljajo IKT. Dobljene rezultate smo analizirali in glede na leta primerjali med seboj.

Abstract: This paper represents observation on digital competences with primary school teachers from the year 2012 to 2014. Observations made are based on a two part on-line questionnaire in which primary school teachers are the focus group. The first part consists of demographics (gender, age and seniority, level of education, title, educating region and population). The second part includes digital competences of primary school teachers. We researched which hardware and software equipment is being used in classes (Slovene, Math and Environmental Sciences), the virtual tools used for establishing communications and co-operating with broader audiences and the amount of hours spent per week on the web for educational purposes in their classes. We were interested in the amount of hours per week in which Information and communications technology (later referred to as ICT) is used for consolidation of knowledge, repetition and gathering learning materials. We also collected information regarding possible hazards such as child or youth abuse when using on-line and mobile technologies, production and update of on-line learning material and the reason for use of ICT by the teachers. The gathered data was analysed and compared according to age.



Izobraževalna igra Aladin in njegova leteča preproga

Educational game Aladin and its flying carpet

Franc Jakoš • Osnovna šola Janka Glazerja Ruše,
Osnovna šola Selnica ob Dravi

Mirko Đukić • Zavod Antona Martina Slomška, Škofijska gimnazija
Antona Martina Slomška Maribor

Domen Verber • Fakulteta za elektrotehniko, računalništvo in informatiko,
Univerza v Mariboru

Povzetek: Poučevati začetnike programirati je velik izziv za učitelje. Učenci kmalu izgubijo voljo za napredovanje in reševanje težjih problemov. Sodelovalno učenje je bilo prepoznano kot metoda, ki lahko pomaga pri doseganju boljših rezultatov, če je sodelovanje aplicirano v pravem času, to je takrat, ko se problem rešuje.

Prispevek opisuje in analizira prva srečanja učencev in dijakov z navideznimi večuporabniškimi okolji, ki omogočajo sodelovalno učenje. To srečanje smo učencem omogočili z izobraževalno igro "Aladin in njegova leteča preproga", ki je bila narejena po vzoru programa Lightbot 2.0 in omogoča spoznavanje konceptov programiranja brez predhodnega poznavanja sintaktičnih pravil. Naš namen je bil združiti privlačnost in motivacijsko moč simuliranih navideznih okolij in didaktično moč učenja s pomočjo igre.

Pripravili smo programsko distribucijo Aladin_Opensimulator_0.7.6.1. Le-ta vsebuje igro in vsa potrebna pred-nastavljena orodja, ki omogočajo učiteljem enostaven zagon in uporabo simulacije v razredu. Pripravili smo tudi spletno mesto, kjer so dostopna navodila za upravljanje s simulacijo in izobraževalno igro ter opis aktivnosti za poučevanje programiranja.

Udeleženci izobraževalno igro dobro sprejmejo. Pripravljene so reševati naloge, v kolikor je igra pravična in deluje zadovoljivo. Hitro razumejo tudi gradnjo v svetu in sestavljanje programov s Scratch4Opensim ter prenos generirane kode v navidezno okolje. Reševanje življenjskih problemov jih dodatno motivira za učenje.

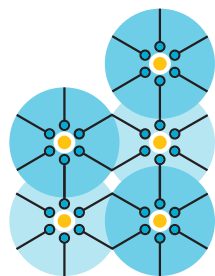
Abstract: Teaching programming to beginners represents a challenge for teachers. Students soon lose the will to make progress and solve difficult problems. Collaborative learning has been recognized as a method that can help to achieve better results if the collaboration is administered at the right time, that's when the problem is tackled.

This paper describes and analyzes the initial meetings of pupils with virtual multiuser environments that support collaborative learning. This encounter was

enabled through educational game “ Aladdin and his flying carpet “, which was modelled after the Lightbot 2.0 which also enables learning about programming concepts without prior knowledge of syntactic rules. Our aim was to combine attractiveness and motivational power of simulated virtual environments and educational power of learning through the game.

We have prepared a software distribution Aladin_Opensimulator_0.7.6.1, which contains the game and all the necessary pre-configured tools that allow teachers to easily start and use simulation in the classroom. We have also prepared a website, where instructions on how to operate the simulation are accessible, explanation of educational game operations and activities for teaching programming.

All participants accepted educational game very well. They are willing to tackle tasks if the game is fair and works relatively satisfactory. They quickly understand “in world” building and assembling programs with Scratch4Opensim and transfer of generated code in a virtual environment. Solving life's problems further motivates them to learn.



Vrednotenje digitalnih kompetenc skozi tekmovalni cikel multimedijskih vsebin

Evaluation of digital competence through the competition cycle of multimedia content

Andrej Kociper • Osnovna šola Cerkevjak – Vitomarci

Povzetek: Avtor v prispevku predstavlja kakovostne vidike državnega tekmovanja iz znanja računalništva t.i. Festival računalništva – multimedijski ekoplakati.

Tekmovanje, ki spodbuja kreativno in sodelovalno delo učencev s pomočjo WEB 2.0 orodij, povezuje IKT tehnologije z vsebinami, ki bi bila učencem privlačna ter jih krati spodbuja k odkrivanju in večji ekološki ozaveščenosti. Na koncu se izdelki – in s tem dosežene digitalne kompetence – vrednotijo, kar pa predstavlja za vsako učno okolje poseben izziv. Skozi tekmovanje se ob rabi digitalnih naprav, e-vsebin in e-storitev nadgrajuje kakovost vrednotenja na višjih taksonomskih ravneh ter poudarja potreba po pripravi učencev za delo v skupinah. Visoka stopnja korelacije različnih akademskih področjih tekmovanja nakazuje, da je tekmovanje interdisciplinarno in projektno naravnano. Avtor na koncu predstavi spletno platformo Glogster kot primerno za tovrstno tekmovanje.

Abstract: The autor presents a qualitative aspects of the national competition of knowledge of computer technology, the so called Festival of Computer Science – Multimedia Ecoposter.

The competition, which promotes creative and cooperative work of students using Web 2.0 tools, links ICT technologies with content that would attract and encourage students to explore and to become more ecologically aware. At the end, the products and the achieved digital competences are assessed, which is a special challenge for every learning environment. Through the competition, with the use of digital devices, e-content and e-services, the quality of assessment si upgraded to higher taxonomic levels and highlights the need to prepare students for group work. High correlation of various academic fields in competition suggests that competition is interdisciplinary and project-oriented. At the end the autor presents web platform Glogster applicabe for such competitions.

Mobilna aplikacija MojKomunikator

A mobile application MojKomunikator

Vlasta Lah, Tina Črnič • Osnovna Šola Milke Šobar – Nataše Črnomelj

Povzetek: Na Osnovni šoli Milke Šobar – Nataše v Črnomlju smo v okviru projekta Razvoj mobilnega komunikatorja za lažje sporazumevanje, ki ga je podprlo Ministrstvo za izobraževanje, znanost in šport ter Evropska unija – Evropski sklad za regionalni razvoj, oblikovali sodobni elektronski pripomoček za komunikacijo, ki temelji na vsakdanjih pogovornih situacijah.

Mobilna aplikacija MojKomunikator omogoča možnost sporazumevanja osebam, ki zaradi različnih vzrokov ne morejo govoriti. Uporablja se lahko tudi za učenje oziroma utrjevanje besed v slovenščini. Uporabniki za uporabo aplikacije Moj komunikator ne potrebujejo nobenega predznanja, saj je le-ta za uporabo enostavna.

Vsebuje osnovne besede in sporazumevalne vzorce (v slikovni, besedni in zvočni obliki), ki so potrebne za vsakdanje sporazumevanje. Uporabnik izbira posamezne sličice in jih sestavlja v povedi, ki jih aplikacija predvaja. Sestavljene povedi lahko shranjujemo v posebno mapo.

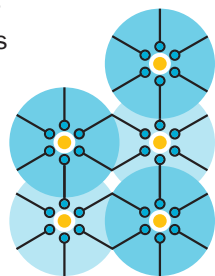
V okviru projekta je bil razvit tudi spletni portal, ki omogoča delovanje aplikacije na stacionarnem računalniku ter prilagajanje le-te uporabniku z dodajanjem svojih slik in zvokov. Spletni portal omogoča prenos uporabniku prilagojene aplikacije na svojo mobilno napravo.

Aplikacija deluje na petih različnih platformah. Brezplačno je na voljo v spletnih trgovinah in kot spletna aplikacija na spletni strani <https://www.mojkomunikator.si/>.

V prispevku podrobneje predstavljamo aplikacijo MojKomunikator: vsebinsko zasnovano, funkcije ter možnosti prilagajanja aplikacije uporabnikom.

Abstract: Primary School Milke Šobar – Nataše Črnomelj in the framework of the project The development of the mobile Communicator for ease of communication, supported by the Ministry of Education, Science and Sport and the European Union – the European Regional Development Fund, created a modern electronic device for communication, which is based on everyday communication.

The mobile application MojKomunikator allows and aids communication for people who, for various reasons, are unable to speak. It can also be used as a tool for learning words in Slovenian language. Users require no prior knowledge as the application is simple and easy to use.



It contains basic words and communication patterns (in image, text and audio form) that are necessary for everyday communication. The user chooses among individual pictures and arranges them into sentences, played by the application. Compound sentences can be stored in a special folder.

A Web portal has been developed in the framework of the project, which allows the users operating the application on the stationary PC with personalized options of adding their own images and sounds. It is also possible to download the personalized application from the Web portal to a mobile device.

The application works on a variety of platforms. It is available in Web stores and as a Web application on the Web site <https://www.mojkomunikator.si/>.

In this contribution, we present more detail regarding the application MojKomunikator: in terms of content, design, features, and customization options.

Podpora učiteljem pri vpeljavi IKT

Supporting teacher with ICT implementation

Klemen Urankar • Gimnazija Franceta Prešerna Kranj

Povzetek: Vedno več šol se odloča za uporabo IKT na vseh področjih dela, od vodenja dnevnikov in redovalnice, do dnevne interakcije z dijaki in starši. Pogosto pa se pri vpeljavi IKT pozablja na "mehke" dejavnike, saj IKT sama po sebi ni čudežno zdravilo, ki bi kar samodejno rešilo vse težave.

Ključni dejavnik pri doseganju zastavljenih ciljev vpeljave IKT so predvsem njihovi uporabniki – profesorji. Zato je zelo pomembno, da imajo pri vpeljavi nove tehnologije, ki jo skoraj vedno spremljajo določene težave, procesne ali tehnološke, profesorji kakovostno, strokovno in osebno podporo.

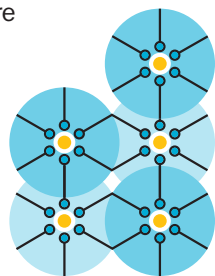
Na podlagi naših izkušenj pri vpeljavi IKT sistemov v učni proces smo identificirali naslednje pomembne korake vpeljave:

1. Izbor oziroma vzpostavitev manjše ekipe, ki bo začela z vpeljavo IKT;
2. Začetek uporabe v omejenem obsegu (npr. en razred) in identifikacija potencialnih težav;
3. Prenos znanja in izkušenj na širšo ekipo ter nadaljnje zbiranje informacij o morebitnih težavah;
4. Redna srečanja in stalna podpora širši ekipi pri tehničnih, didaktičnih in psiholoških izzivih;
5. Postopna širitev in prenos znanja na vse profesorje.

V svoji predstavitvi bom podrobno razložil način, na katerega bi profesorje pripeljali do tega, da IKT vzamejo za svojo, da jim pomaga pri pouku in naredi predavanja veliko bolj kakovostna in zanimiva.

Abstract: Ever more schools are implementing ICT solutions in all fields of work, from administration to daily teacher-student-parent interaction. However, the soft factors of ICT implementation are often forgotten. ICT in itself is not a magic cure, automatically solving all the challenges.

The key to successful ICT implementation are especially its users – teachers. Therefore it is vital that we offer them high quality, professional and personal support with the use of a new technology, especially early on, when there are a lot of technical and other issues.



Based on our extensive experience with ICT implementation in the school process we have identified the following important steps:

1. Establishment of a small team that will begin implementing and using ICT;
2. Limited use (for example in one class) and discovery of potential problems;
3. Sharing knowledge and experience with a wider team and continuous gathering of information about potential problems;
4. Regular meetings and constant support to the wider team with their technical, didactical and psychological challenges;
5. Gradual expansion and constant sharing of knowledge and experience with everyone included.

In my presentation I will explain in detail, how to get teachers to adopt ICT for more interesting and engaging class time.

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Učenje, poučevanje, vrednotenje,
varnost, prostor in podpora

•

Learning, teaching, assessment,
safety, space and support

S pomočjo spletnega okolja učenci razvijajo kritično mišljenje in se urijo v načrtovanju in evalviranju svojega učenja

Students are developing their critical thinking and training themselves in planning and evaluating their own learning with the help of innovative learning environment

Maruša Bogataj, Katja Knific, Eva Traven, Branka Vodopivec •
Osnovna šola Predoslje Kranj

Povzetek: Učenci osmih razredov Osnovne šole Predoslje Kranj v letošnjem šolskem letu svoje delo načrtujejo, vrednotijo svoje znanje in napredek v spletnem okolju Mahara. Skupaj s 13 partnerji iz sedmih držav sodelujemo v dveletnem razvojnem mednarodnem projektu E-listovnik (EUfolio).

Temeljni namen uporabe omenjenega spletnega okolja je uvajanje sodobnih pristopov k učenju in poučevanju ter spremljanju in vrednotenju znanj, s poudarkom na razvijanju veščin 21. stoletja. Temeljna veščina razvojnega e-listovnika je samouravnavanje. Gre za aktivni proces, v katerem učenec oblikuje cilje svojega učenja, spremlja, nadzoruje in uravnava svoje razmišljanje, motivacijo in oblikuje svoje strategije učenja. Posebno pozornost učenci namenjajo tudi veščini kritičnega mišljenja in argumentacije.

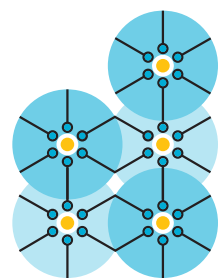
V prispevku bomo predstavile, kako učenci v svojem osebnem elektronskem učnem okolju svoje predznanje dopolnjujejo oziroma nadgrajujejo z novimi temami, oblikujejo svoje učne cilje, načrtujejo strategije za uresničitev postavljenih ciljev, spremljajo ter vrednotijo lasten napredek na različnih področjih učenja in razvoja, pri čemer je poudarek na medpredmetnem povezovanju. Svoj napredek učenci v spletnem okolju dokumentirajo. Skozi delo se poudarja proces učenja in ne le končni izdelek, rezultat učenja. Učenci so že v nekaj mesecih tovrstnega učenja naredili premike v svojem razmišljanju in zavedanju, da so sami odgovorni za svoje znanje in napredek. Mahara spodbuja medvrstniško sodelovanje ter kritično prijateljevanje, ne le učiteljevo povratno informacijo.

Abstract: In this school year our eight class students plan their work, value their knowledge and progress in an innovative learning environment Mahara. We are gathered together with 13 teams from 7 European countries in a collaborative

research and implementation process, an international project EU-folio.

The main intention of using the innovative learning environment is initiating modern approaches into learning and teaching process, assessment and evaluation of students, emphasizing the 21st century skills. The main skill developing through the project EU-folio is self-regulation, an active process, where a student takes control of his own learning aims, planning, monitoring, evaluates his own learning, behavior and progress. There is a special stress on the skill of a critical thinking and giving an argument.

Our conference contribution is going to show the planning of students' learnings in their own personal environment, how do they set up their knowledge and add some more information and new topics, how do they create their own learning aims and strategies to achieve them. They are monitoring their learning progress through the whole learning process and developing. There is a stress on a cross-curricular approach to learning. Students are recording their progress in their personal learning environment. The most important is the process of learning and not only the result or the product of learning. We can already see the progress in students' thinking and awareness of their own responsibility for learning and their knowledge after a few months of working in this innovative learning environment. Mahara stimulates the collaboration between the teenagers and it stimulates critical friendships. Now it is not only the feedback of a teacher important to make a progress.



E-učbeniki prihodnosti

E-textbooks of the future

Matija Lokar • Fakulteta za matematiko in fiziko, Univerza v Ljubljani

Povzetek: Elektronske različice učbenikov (e-učbeniki) so vroča tema na področju izobraževanja. Dober e-učbenik naj bi se precej razlikoval od tiskanega učbenika. Poleg očitnih dopolnitev in izboljšav, kot so interaktivnost, uporaba multimedije in enostavnost navigacije, morajo omogočati še mnogo več.

Ker je potreba po individualnem pristopu do vsakega učenca vse bolj in bolj poudarjena, je ena od odločilnih sprememb zahteva, da mora e-učbenik omogočati prav to prilagajanje in personalizacijo. Prilagajanje je potrebno na različnih ravneh: naj bo to tehnično (prilagoditev različnim napravam, orodjem, ki se uporabljajo v primerih ipd.) ali (bolj pomembno) prilagoditev vsebin. Izvedba prilagoditev bo eno izmed najpomembnejših opravil učitelja prihodnosti. Učitelj je tisti, ki je usposobljen e-učbenik prilagoditi konkretni pedagoški situaciji. E-učbenike je treba zasnovati tako, da jih je moč prilagoditi pedagoški situaciji in uporabniku, naj bo to učenec ali učitelj, zato morajo biti pripravljene precej drugače kot tiskane izdaje. V predavanju bomo prikazali nekaj konkretnih primerov, kjer so nekatere od predlaganih idej deloma ali v celoti že uresničene.

Abstract: Electronic versions of textbooks (e-textbooks) are a hot topic in educational community. A good e-textbook should be quite different from the printed textbook. It should provide much more besides the obvious additions and improvements like interactivity, usage of multimedia, and easy navigation.

As the need for individual approach towards each student is becoming more and more emphasized, one of the crucial changes requires that e-textbook should allow customization and personalization which should be achieved on different levels: on a technical level (adaptation to different output devices, tools used in examples etc.) or (more important) on the level of adaptation of the content. This customization will be one of the most important parts of the teacher's work in the future. It is the teacher who is making the e-textbook suitable for the particular pedagogical situation. Therefore e-textbooks should be designed to be adaptable to the pedagogical situation and to the user, be it a learner and a teacher.

Hence e-textbooks should be quite different from the printed editions. In the talk we will show some concrete examples where some of the proposed ideas are already implemented and also a description of more concrete ways how should the others look like.

Gluh sem – Nalogo bi rad prekretal

I'm Deaf – I'd like to use Sign Language in my asSIGNment

Romana Kolar, Katja Kastelic, Veronika Ciglar •
Zavod za gluhe in naglušne Ljubljana, Srednja šola

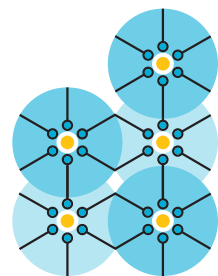
Povzetek: Znakovni jezik je materni jezik večine gluhih oseb. Na Zavodu za gluhe in naglušne Ljubljana zato izvajamo pouk s pomočjo tolmača za slovenski znakovni jezik (v nadaljevanju SZJ) ali z učiteljem, ki ta jezik obvlada.

Slabost znakovnega jezika je, da ga ne moremo prenesti na papir. Domače naloge, pisna ocenjevanja znanja in samostojne vaje običajno zahtevajo pisni zapis v slovenskem jeziku. Pri računalniških predmetih smo začeli s projektom, pri katerem izkoriščamo prednosti novih tehnologij in omogočamo gluhim in naglušnim uporabnikom znakovnega jezika oddajo nalog v SZJ. Po lanskoletni uvedbi Slovarja računalniških izrazov v SZJ smo naredili še korak naprej k skupnemu cilju, da gluhim omogočimo komunikacijo v maternem jeziku tam, kjer je to mogoče. Dijaki tako v spletni učilnici najdejo domače naloge z navodili, posnetimi v SZJ, nato pa s pomočjo kamere na katerikoli mobilni napravi ali s pomočjo spletne kamere na računalniku posnamejo svoj odgovor in ga oddajo v spletno učilnico.

Novost so sprejeli z zanimanjem in prvi rezultati se kažejo v kakovostnejših nalogah. Ta način dela uporabljajo tudi drugi dijaki, ki imajo težave s pisnim izražanjem. Želimo si, da bi lahko v prihodnje na ta način ocenjevali znanje; običajno pisno nalogo bi nadomestili z video posnetkom v SZJ.

Abstract: Sign language is the first language of the majority of deaf people. Therefore the lessons at the Centre for the deaf and hard-of-hearing Ljubljana are conducted in the Slovenian Sign Language (SSL), either by the teachers who are fluent in the SSL or with the support of sign language interpreters.

The weakness of sign languages is that they cannot be easily notated on paper. Homework, written practice, tests and assignments usually require written records in the Slovene language. In our ICT courses/modules, we started a new project in which we exploit the strengths of new technologies and enable deaf and hard-of-hearing users of Sign Language to submit their assignments recorded in Sign Language. Following last year's introduction of the Sign Language Glossary of computer terms in SSL we have made a step forward towards a common goal, to enable deaf people to communicate in their sign language wherever possible. In their on-line classroom, the students can find their homework instructions recorded in the SSL,



and then using a camera on any mobile device, or through a web camera on their computer record their answers or assignments and submit them in the on-line classroom.

The students have been interested in the novelty which has already resulted in a higher quality of their assignments. This method has also been used by other students who have difficulties in the area of writing skills. In the future, we want to be able to assess knowledge by video recordings in the Slovenian Sign Language instead of written tests.

(Ne)varna uporaba interneta v šoli

Secure school Internet use

Iris Kravanja Šorli, Tatjana Božič Geč • Osnovna šola Martina Krpana Ljubljana

Povzetek: V zadnjem obdobju se učno in socialno okolje selita na splet. Učenci in učitelji vedno pogosteje uporabljajo internet in se vključujejo v različna spletna družabna omrežja. Šolski prostor se širi v virtualni svet, ki so si ga učenci poustvarili in v katerega učitelji praviloma nimajo dostopa.

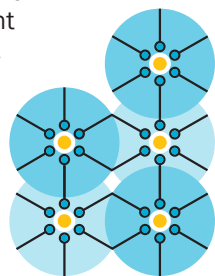
V šoli učenci dobijo veliko informacij in usvojijo znanja z različnih področij. Eno od njih je ozaveščanje o varni uporabi interneta. Le-to poteka skozi informiranje učencev, učiteljev in staršev. Pomembna je senzibilnost vseh strokovnih delavcev za različne pojave zlorabe. Zlorabe je treba v šoli celostno obravnavati in v reševanje problema vključiti učence, razrednika, šolsko svetovalno službo in starše. Predvsem je pomembno ozaveščanje in nagovarjanje tistih učencev, ki pri zlorabah ne sodelujejo, vedo pa zanje, a o njih ne spregovorijo.

V šoli smo zaznali nekaj zlorab na Facebooku, kjer so sošolci obračunavali med seboj in se norčevali iz posameznikov. Raziskava o uporabi Facebooka med učenci in učitelji je postala izhodišče za pripravo strategij, kako učence nagovoriti k varni uporabi socialnih omrežij. Učenci so predlagali "razredni Facebook", ki bi deloval pod mentorstvom razrednika. Tudi to je ena od poti do cilja, kako biti varen na internetu.

Abstract: Lately, educational and social environment more often depends on the Internet. Pupils and teachers more often use Internet and they are becoming part of on-line social networks. School environment is spreading in virtual world in which pupils' life is off limits for teachers.

School is a space where pupils get a lot of information and conquer knowledge in different fields. It is only correct for school to give them knowledge about safe use of Internet as well. Learning process can involve technical educations for pupils, teachers and parents and even more importantly increased sensibility of teachers and other school personnel. Abuse that is caused by other pupils must be as whole considered by school professional workers. Solving the originated problem must involve groups of pupils, class teachers, school consultative service, parents and sometimes whole classes.

In school, we came across a few Facebook abuses. Pupils were making fun of individuals. That is when we decided to make a wider survey about safe use of Facebook among pupils and teachers. The information we got was important part of preparing the strategies to address pupils to the safe use of Internet and mostly on-line social networks. Pupils suggested to create "class Facebook page" mentored by teachers. These are all different ways to the same objective, how to be safe on the Internet.



Odprto učno okolje v tretjem razredu

Open learning space in the 3rd grade

Mateja Pintar • Osnovna šola Dobje

Povzetek: Sodobna šola si prizadeva za sodelovanje in udeležbo vsakega posameznika, spodbuja iniciativnost, ustvarjalnost, aktivnost, evalvacijo in refleksijo. Odprta/sodobna šola ima najbolj kakovostno formativno spremljanje znanja, fleksibilno organizacijo učenja, bogato skladišče informacij in stalno možnost za kakovostno povratno informiranje. V prispevku predstavljam, na kakšen način smo začeli uvajati odprto učno okolje v tretjem razredu.

Mobilne tehnologije so učencem omogočile, da so se učili kjerkoli, kadarkoli, s katerokoli napravo in s pomočjo kogarkoli. Učenci so sprejemali drugačnost, ker je tudi njim bila dana učna priložnost. Na voljo so imeli fleksibilen, odprt in dobro opremljen prostor z IKT opremo. Pouk je bil usmerjen na razvoj posameznika. Učenci so bili aktivno vključeni v načrtovanje učenja (kaj in kako se bodo učili, katera orodja in vire bodo pri tem uporabili). Lahko so svobodno raziskovali, razvijali bralno pismenost, se orientirali v naravi, sprejemali različne povratne informacije in se učili iz življenja za življenje.

Učenci so bili sposobni motivirati samega sebe za učne aktivnosti in imeli glavno vlogo v učnem procesu. Znali so poiskati informacije in uporabljati mobilno tehnologijo. Kot učiteljica sem jih spremljala in usklajevala potrebe učenja s poučevanjem. Na tak način se je pri učencih razvijala ustvarjalnost, samostojnost in motiviranost za delo.

Abstract: Modern school strives for cooperation and participation of every individual pupil, encourages initiative, creativity, activity, evaluation and reflexion. Formative assessment of knowledge, flexible lessons, rich store of information and constant qualitative feedback are the components of the open/modern school. In this article I present the beginnings of an open learning space initiation in the 3rd grade. Mobile technology enabled the pupils for learning wherever, whenever, by whomever and by using different mobile devices. Pupils accepted diversity, because learning opportunity was given also to them. They were able to use a flexible, open and good ICT equipped classroom. The lessons were focused on individual's development. Pupils were actively involved in the learning planning (what and how to learn, which tools and sources to use). Free researching was enabled to them; they developed reading literacy, observed the nature and accepted different feedbacks. They obtained the knowledge from life for the life. Pupils were able to motivate themselves for learning activities and they had the main role in learning process. They could find information and use mobile technology. I followed their learning as their teacher and adjusted it to the teaching claims. In this way pupils developed their creativity, independence and motivation for their work.

Razvijanje kompetenc z igranjem dopisnega šaha

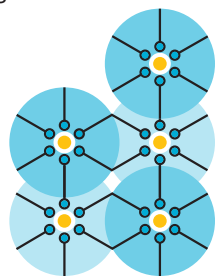
Developing competences with playing corresponding chess

Viktor Jemec • Srednja šola Domžale

Povzetek: Učitelji v osnovnih in srednjih šolah se vedno bolj zavedamo, da učencem in dijakom omogočimo kakovostno podajanje učne snovi tako v rednih programih šolanja kot tudi pri dopolnilnih dejavnostih. S sprejetjem deklaracije Evropskega parlamenta št. 50/2011 (15. marec 2012) o uvedbi programa "Šah v šolah" v izobraževalne sisteme v Evropski uniji in vnosom zahteve v Resolucijo o Nacionalnem programu športa za obdobje 2014–2023, ki je bila sprejeta 11. marca letos na seji Odbora za izobraževanje, znanost, šport in mladino slovenskega državnega zbora, je dana tudi slovenskemu učitelju možnost razvijanja kompetenc na tem področju. V tem dokumentu se uvaja šah kot eden zelo spodbudnih elementov za razvoj kompetenc učenca in dijaka. Sodeloval sem že v e-učilnici Šah na SIO, kjer so opisane kompetence učitelja, ki je dobro seznanjen s strojno in didaktično programsko opremo, ki jo zmore učinkovito uporabiti pri delu v šoli in jo tudi kritično presojeti za uporabo učencem ali dijakom. 15. decembra 2013 sem v okviru Šahovske zveze Slovenije na področju dopisnega šaha prvič v Sloveniji organiziral dve državni prvenstvi: turnir mladih do 12 let in turnir mladih do 20 let (<http://www.dopisni-sah.eu/Joomla/index.php?limitstart=5>).

Tu so se zelo uveljavile kompetence učitelja, ki zna delati na daljavo (pojasnila in pomoč prek e-pošte in uvedba e-učilnice). Uporaba šahovskih programov zahteva veliko dela z iskanjem, zbiranjem, obdelavo in vrednotenjem šahovskih partij, da bi se prek šahovskih motorjev izbralo najboljše poteze. V okviru tega tekmovanja in izobraževanja pri izbirnem predmetu v zadnjem vzgojno-izobraževalnem obdobju in pri šahovskih krožkih je treba napisati priručnik o osnovah igranja dopisnega šaha za mlade, sodelovati v e-učilnici, upoštevati pravna in etična načela in na koncu tekmovanja opraviti še temeljito evalvacijo, da bi v nadalje odpravili napake in pomanjkljivosti, ki se pojavljajo v tej fazi razvoja.

Abstract: Teachers in elementary and secondary schools are more aware that we make quality passing of subject possible for pupils and students like this in regular programs of schooling, and also at supplementary activities. With acceptance of declaration of European parliament of No. 50/2011 from the dating of 15th March 2012, about the introduction of program "Chess in schools" to educational systems in the European Union and entry



of demand in resolution on national program sports and National program of sport for period between years 2014 and in 2023, that was accepted at session of committee for education, science, sport and youth of Slovene National Assembly on March 11 this year, is enabling that Slovene teacher can develop competences on this field. In this document introduces chess as one of him very stimulative elements for development of competences pupil and students. I am already cooperating in e-schoolroom Chess on SIO, where competences of a teacher already are described, that is good introduced machine he can use both didactic software and her efficiently at part in school and her also critically to think for use pupil or student. I organised two nationals for the first time in frame of chess association of Republic of Slovenia on field of corresponding chess in Slovenia on December 15, 2013, first: tournament of young until 12 years and other: tournament of young until 20 years.

Here are very exercised of competence teacher, that knows how with part on distance (explained both help through electronic mails and the introduction of e-učilnice), much part was with search, gathering, treatment and evaluation of chess Communist Parties with use of chess programs and through the chess engines choosing of best move. In frame of this competition and education at optional subject within last triadi and at chess clubs is necessary to write the manual on bases of playing of corresponding chess for young, to take part in e-učilnici, to consider legal and ethical principles and to finish still thorough evaluation at the end of competition, that bi in forward abolished of mistake and faults, that are appearing in this phase of development of development.

6.

Odprta učilnica: sodobni pristopi
k učenju in poučevanju z IKT



Open space: new approaches
in learning and teaching with ICT

Odperta učilnica: sodobni pristopi k učenju in poučevanju z IKT

Open space: new approaches in learning and teaching with ICT

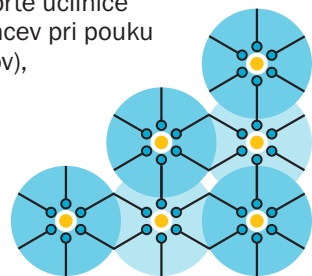
S konceptom Odprte učilnice nadaljujemo zgodbo s SIRikt-a 2013. Letos jo posvečamo sodobnim pristopom k učenju in poučevanju z IKT, torej stopamo učencu naproti.

Odperta učilnica so raznovrstni učni otoki (deloma ločeni, a odprti učni prostori), pripravljene za specifične, učencu prilagojene, oblikovane učne dejavnosti, z različno tehnologijo in sodelujočimi timi. Učenci/udeleženci v Odprti učilnici imajo na otokih možnost kombiniranega (blended) učenja, učenja na daljavo (on-line) učenja ali v živo (F2F – face to face) učenja. Odprta učilnica naj bi odgovarjala metodam in organizacijskim strukturam (oblikam) ter tehnologiji 21. stoletja. IKT je zgolj orodje in ne vodilo, temelji na pristopu “prinesi svojo lastno napravo” (BYOD – bring your own device), na močni, prodorni brezžični povezavi, premiku k oz. na “oblake”, na mobilnosti ter izbranih tudi dereguliranih pristopih (povzeto po S. Harris).

Odperta učilnica na SIRikt-u 2014 bo v dvorani Vitranc v petek, 30. 5. 2014, med 13.30 in 16.30. Organizirana bo v obliki učnih otokov, nekoliko oddaljenih prostorov za učenje oziroma pouk. Učnih otokov bo 11, od tega osem notranjih in dva zunanja, s središčem, osrednjim prostorom, ki smo ga poimenovali agora (gr. trg, zbor), kjer se bodo odvijale dobrodne aktivnosti v sodelovanju s Slovensko filantropijo ter individualne aktivnosti povezane z dejavnostmi otokov Odprte učilnice.

Na otokih bo vzporedno potekal pouk oziroma dejavnosti. V predvidenem času za Odprto učilnico se bo pouk na posameznem učnem otoku izmenjal kar trikrat – trije krogi pouka po 40 minut (glej podroben program Odprte učilnice SIRikt 2014). Posamezen krog pouka v 60 minutah bo vključeval 40 minut, namenjenih pouku, 10 minut diskusiji in 10 minut menjavi med učnimi otoki. V naslednjem krogu se bo dejavnost bodisi ponovila ali zamenjala z drugo. Obiskovalci odprte učilnice bodo lahko prevzemali različne vloge: od povsem aktivnih udeležencev pri pouku oziroma dejavnostih otoka, aktivnih opazovalcev pouka (hospitantov), bežnih, površinskih, zvedavih opazovalcev do firbcev.

The concept of Open Spaces continues the story from SIRikt 2013.



This year it is dedicated to the modern approaches of teaching and learning with ICT, so we are getting closer to students.

Open Spaces are diverse learning islands (partly separated, but open learning spaces), prepared for specific, personalized student-designed learning activities, with different technology and teams. Students/participants in the Open Spaces on the islands have the option of blended learning, distance (online) learning or face to face learning. Open Spaces shall reflect the 21st century methods, organizational concepts (forms) and technology. ICT is only a tool and not a guide. They are based on the Bring-Your-Own-Device concept, on reliable wireless connection, on the move to the “clouds”, on the mobility and also on different deregulated approaches (adapted from S. Harris).

SIRikt 2014 Open Spaces event will be held in Vitranc Hall on Friday, 30/5/2014 between 1:30 p.m. and 4:30 p.m. It will be organized in the form of learning islands. There will be 11 islands, of which 8 are indoor islands and 2 are outdoor islands, with a central space called agora (Greek: agora = market, choir). Learning activities will be running on all islands simultaneously. During the event the activities on individual islands will exchange three times, i.e. there will be three rounds of 40-minute learning activities (see detailed program of the SIRikt 2014 Open Spaces). Each round will include 40 minutes of learning, 10 minutes for discussion and 10 minutes for the exchange of activities and participants/audience. In the next round, the activity will either be repeated or replaced with another. Visitors to the Open Spaces will be able to take on different roles: from fully active participants in the classroom, to active observers of activities (sitting-in-on-classes), and just curious, nosy busybodies.

Z i-učbeniki do bolj poglobljenega znanja kemije

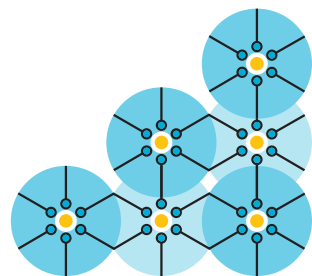
With i-textbooks to more in-depth knowledge of chemistry

Mariza Skvarč, Anita Poberžnik, Andreja Bačnik • Zavod RS za šolstvo

Povzetek: V Odprti učilnici bomo na izbranem vsebinskem sklopu kisline, baze in soli prikazali primer uporabe i-učbenika pri pouku kemije, s poudarkom na eksperimentalnem delu in vizualizaciji. Eksperiment v i-učbeniku bomo nadgradili z eksperimentalno dejavnostjo “v živo” ter povezali eksperimentalna opažanja in rezultate s teoretično usvojenim kemijskim znanjem ob uporabi učne strategije za organiziranje pojmov in prikaz relacij med njimi (pojmovne mape) in elementi diferenciacije.

Abstract: In the activity of Open Space we will show an example of using i-textbook for chemistry education. We will work at a selected topic: Acids, bases and salts, with emphasis on experimental work and visualization. Experiments in the i-textbooks will be upgraded with a “live” experimental activity including elements of differentiation. We will link experimental observations and results with theoretical knowledge of chemistry by using learning strategies – conceptual maps for organizing and recognizing relationships between concepts.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Tablični računalnik kot sodoben eksperimentalni in didaktični pripomoček pri obravnavi dinamičnih sistemov v osnovni šoli

Tablet as a modern experimental and didactic tool in discussing the dynamic systems in Primary school

Lidija Grubelnik • Osnovna šola Sladki Vrh

Vladimir Grubelnik • Fakulteta za elektrotehniko, računalništvo in informatiko, Univerza v Mariboru

Povzetek: V odprti učilnici bomo izvedli učno uro fizike z uporabo tabličnega računalnika kot sodobnega eksperimentalnega in didaktičnega pripomočka.

Preučevali bomo vpliv zunanjih sil na gibanje teles in v diferenciranih skupinah eksperimentalno določili velikost težnega pospeška, pri čemer bo tablični računalnik nadomestil različne merilne naprave. Tablični računalnik bo uporabljen tudi kot didaktični pripomoček za proučevanje simulacij in pridobivanje povratnih informacij o usvojenem znanju učencev, kar nam bo vodilo pri oblikovanju poteka učne ure.

Abstract: In the Open Space we are going to show a physics lesson by means of a tablet computer as a modern experimental and didactical tool. We are going to study the influence of external forces on the motion of objects; in differentiated groups we are going to experimentally determine the size of gravitational acceleration, with the tablet computer replacing various measuring devices. The tablet computer will be used as a teaching aid for studying simulations and obtaining feedback on the acquired knowledge of pupils, thus serving as a guide in the course of the lesson.

Uporaba interaktivne prebivalstvene piramide pri pouku geografije

Use of interactive population pyramid in a Geography lesson

Tatjana Kikec • Šolski center Velenje

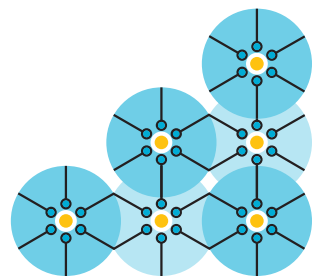
Povzetek: Dejavnost v odprti učilnici bo zasnovana na interaktivni prebivalstveni piramidi Statističnega urada RS. Udeleženci bodo s svojimi napravami odprli spletno stran Statističnega urada RS, namestili brezplačen dodatek ter uporabili prebivalstveno piramido. Samostojno ali v parih bodo reševali učni list z nekaj preprostimi nalogami uporabe interaktivne piramide in skupaj preverili pravilnost rešitev, s prikazom na prebivalstveni piramidi.

V diskusiji se pogovorimo o prednostih in morebitnih ovirah uporabe interaktivne prebivalstvene piramide v primerjavi s klasično piramido (čas, ki smo ga prej namenili risanju prebivalstvenih piramid, lahko sedaj namenimo za njihovo interpretacijo ...).

Abstract: The activity in the Open Space will be based on an interactive population pyramid by the Statistical Office of the Republic of Slovenia. The participants will use their own devices to open a web page of the statistical office, install a free plug-in and use the population pyramid. Alone or in pairs they will do a few simple worksheet tasks using the interactive pyramid, and then together verify the correctness of the results by displaying them on the population pyramid.

In the discussion, we will talk about the advantages and possible problems of the use of interactive population pyramid in comparison with the classical pyramid (e.g. the time that we used to spend for drawing population pyramids can be now dedicated to their interpretation, etc.).

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Uporaba družbenih omrežij pri pouku

Use of virtual social spaces in the classroom

Romana Fekonja • Zavod RS za šolstvo

Povzetek: V današnjem času je v poplavi raznih informacij potrebno kritično branje in presojanje le-teh. Vse pa je odvisno od namena in načina uporabe. Že pri samem iskanju informacij je treba oblikovati ključne besede, ki ustrezajo naši iskani zahtevi, med ponujenimi zadetki pa moramo najti tiste, ki jih potrebujemo, in jih kritično ovrednotiti.

V dejavnosti bomo skupaj oblikovali ustrezne ključne besede, spoznali, kako omejimo naše iskanje, da se kar najbolj približamo informacijam, ki jih potrebujemo za naš namen. Pomemben vir informacij so tudi sodobna družbe na omrežja. V odprti učilnici bomo pokazali, kako lahko tudi ta sodobna orodja uporabimo pri pouku, in opozorili, na kaj je treba biti pozoren ob njihovi uporabi. Učenci so dokaj večši uporabniki virtualnih medijev, vendar se velikokrat ne zavedajo popolnoma, kakšne pasti prežijo na njih. Skozi vsebino pouka bomo predstavili, kaj morajo upoštevati pri uporabi družbenih omrežij.

Abstract: Nowadays, we are witnessing a flood of information. Therefore, we need competencies for critical reading and evaluation of this information. All depends on the purpose and usage. When searching for information it is necessary to create relevant keywords; among search results it is necessary to find the ones which are relevant for our purpose and it is necessary that we evaluate them critically. At the activity we will together determine relevant keywords, show how to limit our search results so that we get the relevant information. An important source of information are social networks or the so-called virtual social spaces. In the Open space we'll show how these modern tools can be used in the classroom. We'll draw attention to what is to be careful about when using them. Students are quite proficient users of virtual media, but they are often unaware of what pitfalls lurk in them. Through the content of lessons, we will present what students need to consider when using social networks.

Prvi koraki v učenje postopkovnega razmišljanja

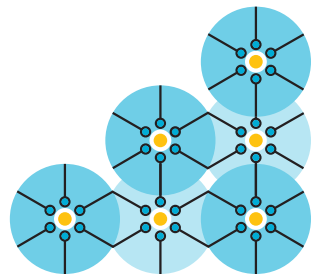
First steps into learning the process-based thinking

Leonida Novak, Radovan Krajnc • Zavod RS za šolstvo

Povzetek: Udeleženci odprte učilnice bodo najprej preverili svoje znanje na določenem naravoslovnem področju in na področju obvladovanja programskega orodja za programiranje. Postavili si bodo osebni cilj, ki naj bi ga dosegli v času, odmerjenem tej izvedbi. V nadaljevanju se bodo seznanili z novim orodjem in osmislili njegovo rabo. S samostojnim delom bodo sestavili preprost program za preverjanje znanja, kar bodo soudeleženci tudi preizkusili in podali povratno informacijo. Vsak udeleženec bo izvedel tudi preprosto samoevalvacijo. Cilj delavnice je povezovati naravoslovno temo iz prvega vzgojno-izobraževalnega obdobja s smiselno rabo tablice ali računalnika. Ob dejavnosti bodo udeleženci dobili uvid v možnosti za razvijanje postopkovnega razmišljanja v prvem vzgojno-izobraževalnem obdobju, sami preizkusili fazo načrtovanja, učenja ter evalviranja učnega postopka.

Abstract: Participants in Open Space will first test their knowledge in a particular field of science and the field of managing the software for programming. They will set a personal goal for the time allotted to this activity. Then they will learn about a new tool and give meaning to its use. On their own they will compile a simple application for testing knowledge, test it with other participants and then provide feedback. Each participant will also do a simple self-evaluation. The aim of the workshop is to connect a topic from science (part of the first cycle of primary school) with purposeful use of a tablet or a computer. Through this activity the participants will get an insight into the possibilities of developing process-based thinking in the first cycle of primary school, and through experiential learning test the phases of planning, learning and evaluating.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Matematika, fizika, angleščina, biologija, IKT skupaj? Ja, e-Twinning!

Maths, Physics, English, Biology, ICT – all together? Yes, it's e-Twinning!

Tatjana Gulič • Osnovna šola Preska

Povzetek: Vas zanima kako poteka učna ura z eTwinningom? Vabimo vas, da se nam pridružite na pravi učni uri, ki bo potekala z učenci Osnovne šole Preska. Simulacija učne ure vas bo seznanila z metodo projektnega poučevanja/učenja in medpredmetnega povezovanja. Pokazali bomo, kako se učimo matematike in drugih naravoslovnih predmetov pri naravoslovnih projektih. Pouk poteka z mednarodnim sodelovanjem in povezovanjem šol v Evropi ter tako vključuje tudi uporabo angleščine. Na otoku odprte učilnice bo prikazano delo v projektu GAME! Garden in Amazing Mathematical Experiences.

Abstract: Are you interested in a lesson with eTwinning? We are inviting you to join us in a lesson with students from primary school Preska.

The simulation of a lesson will make you familiar with the project method of teaching / learning and integration of different subjects. We will show you how to teach mathematics and other science subjects in science projects. Lessons include international cooperation and networking of schools in Europe, and the English language is used. At the Open Space work in the project GAME! Garden and Amazing Mathematical Experiences will be presented.

Sem pametnejši od svoje mobilne naprave

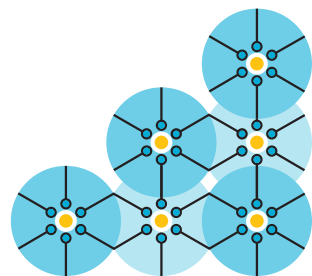
I'm smarter than my mobile device

Marko Puschner • Preslica

Povzetek: Zasebnost postaja z vse bolj zmogljivimi in na splet povezanimi mobilnimi telefoni bolj izpostavljena, zato bomo v odprti učilnici čas posvetili temi varovanja lastne zasebnosti in spoštovanja/varovanja zasebnosti drugih. Za začetek bomo s Facebook aplikacijo preverili, kdo sploh je pametnejši – mi ali naš pametni telefon. Ustavili se bomo pri temah sextinga, geolokacijskih storitev, neprevidnega objavljanja slik in podatkov na spletu prek mobilnega telefona. Vse to lahko hitro privede do mobilnega vrstniškega nasilja, zato se bomo naučili pravil mobilnega bontona, vsak udeleženec pa bo podpisal tudi spletno zaobljubo proti trpinčenju. Informirali se bomo (tudi z videoposnetki) o pametni rabi telefona z vidika izogibanja okužbam, zlonamernim programom in oglaševanju, kar lahko vodi v visoke stroške. Testirali bomo stopnjo svoje navezanosti/zasvojenosti z mobilnimi telefoni in se igrali didaktično igro “Pomagaj prijatelju iz zadrege pri uporabi mobilnega telefona”, kjer bomo iskali ideje za rešitve različnih primerov problematičnih situacij in dilem, povezanih z uporabo mobilnih telefonov.

Abstract: With the mobile phones becoming more and more powerful and connected the privacy is getting more and more exposed, so in the Open Space we will devote our time to the issue of protecting our privacy, as well as the privacy of others. We will start with a Facebook application by means of which we will check who is smarter - we or our smart phone. We will discuss sexting, geolocational services, careless publishing of images and information on the web. All this can lead quickly to mobile peer violence, so we will learn the rules of mobile netiquette, and each participant will also sign an online pledge against bullying. We will inform ourselves (also by means of videoclips) about smart use of smart phones from the viewpoint of how to avoid viruses, malware and spam, which can all lead to high costs. We will test the level of our addiction to mobile phones and play a didactical game “Help your embarrassed friend with his mobile phone”, where we will seek ideas to solve different cases of problematic situations and dilemmas related to the use of mobile phones.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Računalniške izobraževalne igre – Učna ura iz predmeta e-izobraževanje

Computer based educational games

Saša Divjak, Matevž Pesek, Alenka Kavčič •
Fakulteta za računalništvo in informatiko, Univerza v Ljubljani

Povzetek: V odprti učilnici se bomo osredotočili na računalniške aplikacije, ki so namenjene učenju in utrjevanju vsebin prek računalniške igre, a so zastavljene širše, tako da niso vezane na določeno domeno. Tako je računalniška igra izdelana kot ogrodje z določeno vsebino, pri tem pa lahko samo vsebino na dovolj enostaven način tudi spremenimo (torej brez posegov v kodo in poznavanja programskega jezika). S tem damo učitelju možnost, da uporabi ogrodje igre in ga napolni z lastnimi vsebinami, ki se bolje vključujejo v njegovo delo v razredu. Demonstracijam bo sledila razprava.

Abstract: The activity will be focused to the learning and exercising of contents, supported by computer based gamification. This approach will be presented in a broader sense and not restricted to a specific domain. Such computer games can be developed as a framework with an initial particular content that can be easily modified or changed without any knowledge of programming languages. This gives a teacher the opportunity to reuse such gaming framework and to fill it with his own contents that is more appropriate for the inclusion in the classroom activities. The demonstrations will be followed by discussions.

Po Kekčevi poti – Mobilno učenje zgodovine v okviru zgodovinskega terenskega dela

Along the Kekec' path – Mobile learning of history in the context of the historical fieldwork

Vilma Brodnik • Zavod RS za šolstvo

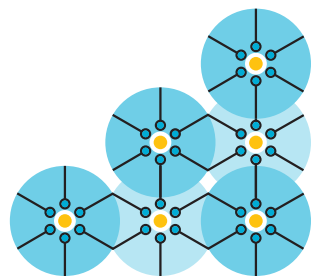
Ana Marija Blažič, Nejc Brus, Bojana Jovič, Primož Kranjc, Marina Prpič,

Dejvid Tratnik • Fakulteta za humanistične študije, Univerza na Primorskem
(študenti pedagoške smeri zgodovine)

Povzetek: Če vas zanima, kako poteka mobilno učenje zgodovine v okviru zgodovinskega terenskega dela, se nam pridružite na zunanjem učnem otoku. Navihani Kekec s prijatelji vam bo na primeru kulturne dediščine Kranjske Gore prikazal primere mobilnega učenja zgodovine "in situ" (na terenu). S pomočjo tabličnih računalnikov ali pametnih telefonov boste poiskali zanimive informacije o zgodovini Kranjske Gore ter preizkusili prednosti vključevanja mobilne tehnologije v pouk zgodovine.

Abstract: If you are interested in how fieldwork in a history lesson, supported by mobile learning looks like, then join us at the outer 'island of learning'. The mischievous Kekec with his friends will show you the cultural heritage of Kranjska Gora by means of mobile learning "in situ" (on the ground). With the help of tablet computers and smart phones you will find interesting information about the history of Kranjska Gora and test the benefits of integrating mobile technology into the teaching of history.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
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Raziskujmo ekosistem z določevalnimi ključi

Let's explore the ecosystem by means of identification keys

Saša Kregar, Kristina Prosen • Zavod RS za šolstvo

Povzetek: V odprti učilnici bomo predstavili terensko delo z uporabo Določevalnega ključa za rastline Sečoveljskih solin, ki vključuje tudi delo z računalniškimi senzorji (Vernier) za merjenje slanosti. Udeleženci bodo v učilnici z nadgrajenim interaktivnim določevalnim ključem določali slanoljubne rastline. Ugotavljali bodo prednosti nadgradnje ter iskali še druge možnosti prilagajanja ključa pouku, glede na razvojno in starostno stopnjo učenca ter ciljev, ki jih želimo v izbranem okolju z aktivnostjo doseči. V nadaljevanju se bodo udeleženci seznanili z zgradbo določevalnega ključa in prosto dostopnim programom za urejanje spletnih strani, s katerim lahko določevalne ključe spreminjamo.

Abstract: In an open classroom we will present fieldwork in biology based on using Identification keys for plants in Sečovlske soline. Activities include work with tablet computers and computer sensors (Vernier) for measuring salinity. Participants will determine halophytic plants, with upgraded interactive identification key. Participants will find out the advantages of upgrading and will search for other options to adapt the key, depending on the age, developmental level of the learner and the goals that they want to achieve with the selected activities. Participants will learn about the structure of identification keys and a freely available program for editing web pages, which can be used for modifying the identification keys.

Modeli učenja z i-učbenikom

Models of learning with an i-textbook

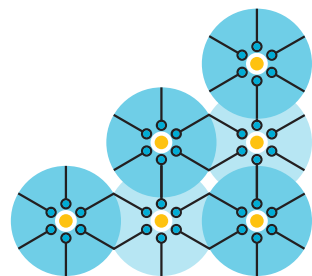
Mojca Suban, Sonja Rajh • Zavod RS za šolstvo

Povzetek: Udeleženci dejavnosti bodo ob aktivni uporabi i-učbenika za matematiko proučevali didaktično vrednost uporabljenih tehničnih rešitev, ki so dinamične in interaktivne. Analizirali bodo predstavljene aktivne slike, od zveznih do diskretnih, ter snovali njihovo smiselno rabo pri vseh fazah pouka ter za samostojno učenje doma. Kritično bodo vrednotili predstavljene primere z vidika dejavnosti učenca, nazornosti, potrebnega predznanja, razvoja pojmov, ponujene pomoči (ali je gradivo primerno za samostojno delo učencev itd.), taksonomije ipd. Udeleženci bodo na skupen zid zapisali svoje načrte za delo v prihodnje.

Abstract: Participants will be active in studying didactical value of technical, dynamical and interactive solutions in e-textbooks. They will analyze active images from continuous to discrete ones, and plan their purposeful use in the classroom in all phases of lessons, as well as for learning at home.

They will critically evaluate the examples shown from the learner's point of view, clearness, prior knowledge, development of terms, offered help (is the e-textbook suitable for students to use it at home independently), taxonomy, etc. Participants will use a shared wall to write down their plans for the future.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Uporaba tablice za eksperimentalno delo pri pouku fizike s podporo vmesnika Vernier

Using tablets for experimental work in physics lessons, supported by Vernier interface

Aljoša Kancler • Prva gimnazija Maribor

Povzetek: Kako lahko celoten razred dijakov samostojno izvaja eksperiment s samo enim kompletom Vernier? Udeleženci odprte učilnice bodo lahko sodelovali pri eksperimentu prek Wi-Fi omrežja. Ob prihodu v učilnico se bodo prek svoje mobilne naprave (tablica, pametni telefon ipd.) povezali z vmesnikom Vernier LabQuest 2. Po izvedbi eksperimenta bodo po navodilih analizirali podatke na grafih za različne eksperimente. Sproti bodo dobili tudi navodila za delo in pomoč pri izvedbi. Eksperimenti bodo s področja gibanja, temperature, elektrike. Namen predstavitve je pokazati možnosti uporabe vmesnika Vernier LabQuest 2 v razredu. Po zaključenem delu bo sledila diskusija o možnostih uporabe in morebitnih izkušnjah udeležencev. Za udeležence bo to vsekakor zanimiva in nova izkušnja.

Abstract: How can an entire class of students simultaneously perform an experiment despite having only one Vernier set available? Participants of the Open Space will be able to participate in the experiment via Wi-Fi network. Upon arrival in the classroom they will connect with their mobile devices (tablet, smartphone etc.) to a Vernier LabQuest interface 2. After experimental work participants will analyze the data on the graphs according to the instructions for the different experiments. They will also get instructions and help on how to work. Experiments will be in the field of motion, temperature, electricity. The aim of the presentation is to show the application possibilities in the classroom. The lesson will be followed by a discussion about the potential applications and experiences of the participants. For the participants this will be definitely an interesting and new experience.

Skupnost Scientix

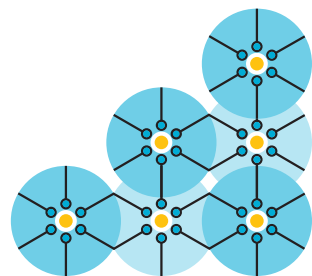
Scientix Community

Alojz Blažič • Osnovna šola Crklje ob Krki

Povzetek: V odprti učilnici bomo spoznali projekt in delovanje portala Scientix. Pregledali bomo možnosti, ki ta jih ponuja za vključevanje v učni proces z gradivi, ki so na voljo. Udeleženci dejavnosti se bodo registrirali na portal, poiskali gradivo za predmet, ki ga poučujejo, in dali zahtevek za brezplačni prevod. Vsak od udeležencev bo na koncu na kratko predstavil, katero gradivo je izbral in na kakšen način bi ga vključil v učno uro.

Abstract: In the Open Space we will learn about the Scientix project and web portal. We will have a look at the possibilities for integrating the available materials into teaching and learning. The participants will sign up to the portal, search for materials for their subject and make a request for a free translation. All the participants will then present the chosen materials and the way they are planning to include them into their teaching.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



Bogatimo besedni zaklad ob pomoči spletnih virov in tabličnega računalnika/pametnega telefona

Enrichment of vocabulary supported by the use of web resources, tablet or smart phone

Andreja Čuk, Romana Fekonja • Zavod RS za šolstvo

Povzetek: V odprti učilnici bomo s pomočjo spletnih slovarjev v besedilih iskali enopomenske besede, prepoznavali različne pomene besed ter ugotavljali različna pomenska razmerja med besedami. V miselni vzorec bomo vpisovali besede, ki spadajo v isto besedno družino, ter si tako bogatili besedni zaklad ter izboljšali svojo slogovno zmožnost. Pri delu bomo uporabljali različne slovarje, ki se razlikujejo tako po vrsti kot tudi po nosilcih oz. medijih. Spoznali bomo slovarje v knjižni obliki, slovarje, ki so dostopni na spletnih straneh in slovarje, ki so na voljo v obliki aplikacij za mobilne naprave.

Abstract: Searching for unambiguous words in different texts with the assistance of online dictionaries is the topic of this Open Space. The participants will identify the diversity of a word's meaning and determine different semantic relations between words. Words belonging to the same word family will be placed into a mind map to enrich the vocabulary and enhance stylistic options. Activities of the workshop will be performed by using various dictionaries differing regarding the sort of dictionary and media. Participants will learn about traditional dictionaries, online dictionaries and dictionaries in application form designed for mobile use.

Primeri dejavnosti kot spodbuda za učenje v vrtcu

Examples of activities serving as stimulation for leaning in pre-school institutions

Urška Stritar, Karmen Usar • Zavod RS za šolstvo

Vanda Femc • Vrtec Sežana

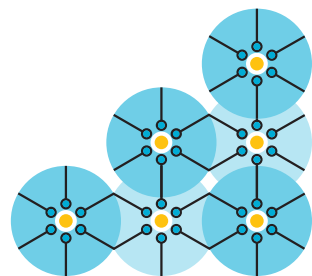
Jana Bergant • Vrtec Škofja Loka

Katja Hozjan • Vrtec Moravske toplice

Povzetek: V odprti učilnici bodo udeleženci pogledali tri prispevke iz pravkar izdanega DVD-ja “Kako otrok raziskuje, se uči in izraža”. Nato bodo vstopili v spletno učilnico in izpolnili kratek vprašalnik. Na osnovi dobljenih odgovorov bomo oblikovali zapis, kako DVD lahko pomaga strokovnim delavcem pri vsakodnevnem delu z otroki in kakšne spremembe opažajo pri svojem vzgojno-izobraževalnem delu zaradi uporabe IK sredstev.

Abstract: In the Open Space the participants will look at three contributions from the recently released DVD “How the child explores, learns and expresses itself”. Then they will enter the virtual classroom and complete a short questionnaire. Based on the responses, we will create a record how the DVD can help pre-school teachers in their daily work with children and what changes are observed in their work with children due to the use of ICT resources.

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Moje učenje o ljubezni :).
Zapisano v e-listovnik!

“My learning” about love. :)
Written in my e-portfolio.

Saša Kregar, Leonida Novak, Tanja Rupnik Vec • Zavod RS za šolstvo

Povzetek: Udeleženci odprte učilnice bodo raziskovali ljubezen (biološki, psihološki vidik, ljubezen skozi oči najmlajših) in skozi to izkušnjo spoznali filozofijo razvojnega e-listovnika ter nekaj načinov, kako organizirati in voditi pouk po načelih formativnega spremljanja in ta proces podpreti z razmisleki, v katere usmerjajo polja v zavihku “Moje učenje” v Mahari.

Abstract: In the Open Space participants will explore the concept of love (biological, psychological aspect of love and love through the eyes of young people). Through this experience they will reveal the philosophy of developmental e-portfolio and learn some examples how to organize and manage teaching based on principles of formative assessment. They will also consider how the proces of formative assessment is supported and guided by the Mahara and its special tab 'My learning'.

Uporaba tabličnega računalnika pri športnem dnevu – Orientacija na razredni stopnji

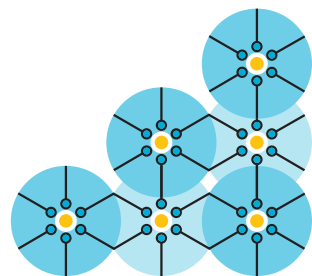
Using a tablet computer for a sports day – Orientation on the primary level

Katja Vezjak • Osnovna šola Kungota

Povzetek: Želite organizirati športni dan, pri katerem bodo učenci uporabljali tablični računalnik? Na učnem otoku boste videli, kako lahko moderno tehnologijo vnesete tudi v takšen dan dejavnosti. Praktično pa bo prikazano tudi, kaj vse lahko uporabite pri športnem dnevu in kako.

Abstract: Do you want to organize a sports day at which students will use a tablet computer? On the 'island of learning' you will see how modern technology can be part of such a day. We will also show you what can be used in a sports day and how.

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Z i-učbenikom do razumevanja Pitagorovega izreka

Understanding Pythagorean theorem with the use of an i-textbook

Jerneja Bone, Mateja Sirnik • Zavod RS za šolstvo

Povzetek: V odprti učnici bomo uporabili posamezne izseke in aplete iz i-učbenika v fazi usvajanja nove vsebine – Pitagorovega izreka. Osredotočili se bomo na uporabo i-učbenika pri domačem delu v smislu priprave na učenje nove vsebine in izpostavili pomembnost preverjanja predznanja, ki ga lahko izvedemo z dobro načrtovano domačo nalogo. Pri pouku matematike bomo aktivno prepletali različne oblike reprezentacij – od konkretnih modelov do i-učbenika na tabličnem računalniku. Primerjali bomo učenje in poučevanje z uporabo i-učbenika in brez njega ter v razpravi izpostavili o prednosti uporabe i-učbenika.

Abstract: During our Open Space session some sample segments and dynamic applets from the Math i-textbook will be used. We will present how they can support students learning a new concept – Pythagorean theorem. We will focus on the use of i-textbook as a homework activity by which students will learn about a new Math concept. The importance of checking prior knowledge that can be performed by well-planned homework will be highlighted. This session will demonstrate how various forms of representation, from concrete models to i-textbooks, can be successfully integrated in Math lessons. We will compare the learning and teaching with and without i-textbooks and discuss advantages and disadvantages of both.

Obravnavanje loma svetlobe z aplikacijo za merjenje kotov na fotografijah

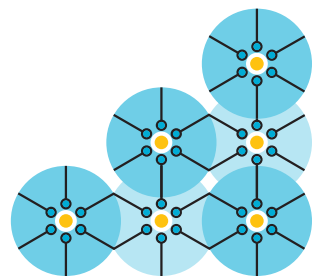
Using a mobile application for measurement of angles in photos as a method of teaching refraction of light

Jaka Banko, Milenko Stiplovšek • Zavod RS za šolstvo

Povzetek: V odprti učilnici bo prikazana možnost uporabe tabličnega računalnika pri pouku fizike med obravnavo loma svetlobe. Najprej bodo udeleženci na tablični računalnik naložili aplikacijo, ki omogoča merjenje kotov na fotografijah. Nato bodo fotografirali potek žarka laserske svetlobe, ki se pod različnimi vpadnimi koti lomi na meji med zrakom in vodo in na fotografijah izmerili vpadne in lomne kote. Vrednosti izmerjenih vpadnih in lomnih kotov bodo primerjali z rezultati, ki jih prikaže simulacija prehoda svetlobe iz zraka v vodo v e-učbeniku ter komentirali rezultate primerjave. Podane bodo še pobude/vprašanja, ki bi naj k razmišljanju vzpodbudile/-a najbolj sposobne učence. Preizkusili bodo možnost uporabe tabličnega računalnika kot pripomočka, ki omogoča učencu takojšnje posredovanje rezultatov meritev, izračunov, ugotovitev ipd. učitelju.

Abstract: During the open classroom session we will demonstrate the possibility of using the tablet PC in physics classroom – content section: refraction of light. Using the tablet PC, the participants will download and install an application that allows measurement of angles in the photos. Then they will take a photo of the path of a laser beam that is refracted at the boundary between air and water. The participants will change angles, measure and take a photo of the incident and the refractive angles. The values of the measured incident and the refractive angles will be compared with the results displayed by the simulation of light transition from the air into the water in an e-textbook, and they will comment on the findings of their comparison. Questions will be suggested which should encourage the best students to think. Participants will test the possibility of using the tablet PC as a device that allows immediate student feedback of measurement, calculation, observation to the teacher.

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Ali lahko spletemo pojmovno mrežo s tablico?

Can we construct a conceptual network with a tablet computer?

Saša Kregar, Simona Slavič Kumer • Zavod RS za šolstvo

Povzetek: Nam je pomembno izvedeti, kako naši učenci razmišljajo, kako organizirajo in kako povezujejo znanje? V odprti učilnici bomo, ob gradnji pojmovne mreže, ugotavljali način razmišljanja in razumevanja učencev ter kako na ta način spodbujamo organiziranje in povezovanje znanja. S pomočjo prosto dostopnih aplikacij za izgradnjo pojmovnih mrež na tabličnih računalnikih bomo na poznano temo odkrivali način lastnega razmišljanja in izdelali pojmovno mrežo. Ob tem se boste seznanili z različnimi aplikacijami za izdelavo pojmovnih mrež, se naučili uporabe le teh in ugotavljali uporabnost aplikacij pri pouku.

Abstract: How important is it to know how our students think, organise and connect knowledge? In the Open Space participants will construct conceptual networks, and experience how we can find out established ways of pupils' thinking and understanding, and how a teacher can promote the organization and integration of knowledge. We will use freely available applications for building conceptual networks on tablets. Based on familiar topic we will discover our own way of thinking and consequently develop a conceptual network. During activities participants will also learn about different applications for the creation of conceptual networks, learn how and when to use them, and identify the usability of applications in the classroom.

Klasična jezikovna tema v novi preobleki

A Common language topic in a new disguise

Alenka Andrin, Andreja Čuk, Susanne Volčanšek • Zavod RS za šolstvo

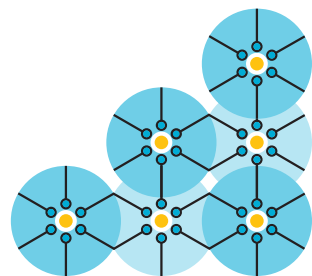
Povzetek: Glavno vodilo sodobnega komunikacijskega pristopa pri poučevanju in učenju jezika je neposredna raba jezika v različne sporazumevalne namene, ki jih poskušamo čim bolj približati avtentičnim in predvsem življenjskim situacijam.

Dejavnost je namenjena praktičnemu prikazu učne ure s sicer klasično temo, ki pa poudarja posameznikovo vključenost v različne učne dejavnosti s podporo prosto dostopnih aplikacij in uporabe tablice oziroma pametnega telefona kot snemalne naprave. Skupaj se bomo pripravili na praznovanje rojstnega dneva. Prijazen video posnetek nam bo pomagal pri ugotavljanju učenčevega predznanja, s prosto dostopno aplikacijo SimpleMindFree bomo izvedli kratko možgansko nevihto, urili se bomo v neuradnem telefonskem pogovoru, ki ga bomo tudi posneli in delili z ostalimi udeleženci. Z naštetimi dejavnostmi razvijamo slušno razumevanje, pisno sporočanje, govorno sporazumevanje, predvsem pa kreativnost pri pouku.

Abstract: The main clue of modern communication approach in language teaching and learning consists of the direct language use in various communication purposes trying to match with authentic and live close situations. The objective of the workshop is to demonstrate a language lesson with a common topic by intensifying the individual's occupation in different learning activities supported by free applications and the use of the tablet or smart phone as a recording device.

Together we will make preparations for our birthday party. A kind video will assist us in establishing the student's background knowledge of the topic, we will perform a short brainstorming by using the free application SimpleMind Free, we will practice an unofficial phone call, which will be recorded and shared with the other participants. By using the activities above listening, writing and speaking skills and mostly creativity in the classroom are being developed.

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E-listovnik, ali kako spodbujati sodelovanje in komunikacijo (pouk obveznega drugega tujega jezika)

E-portfolio or how to encourage cooperation and communication (in second foreign language lessons)

Tatjana Lubej • Osnovna šola Janka Glazerja Ruše

Povzetek: Podajanje povratne informacije o opravljenem delu ustno ali pisno? Katero je trajnejše in ima za prejemnika večjo vrednost? Odgovora na vprašanja bomo iskali pri prikazu učne ure predstavitev govornega nastopa s podajanjem povratne informacije učitelja in sošolcev v e-listovniku. Pregledali bomo Forum v e-listovniku (okolje Mahara), v katerem je bila za vsakega učenca odprta nova tema, v katero so vstavljena navodila za delo in kriteriji za ovrednotenje govornih nastopov, ki so jih pripravili učenci. Sodelujoči si bodo pogledali, kaj je avtor govornega nastopa samostojno dodal v svojo temo, kako so ostali učenci neposredno po opravljeni predstavitvi ovrednotili govorni nastop in na kak način je avtor iz povratnih informacij izluščil dobre lastnosti svojega dela in napravil načrt za odpravo slabših.

Predstavljena bo tudi naloga učitelja, ki je učence predhodno pripravil na tako obliko podajanja povratne informacije in je po opravljenem delu pregledal delo učencev ter vsakemu napisal komentar o njegovem delu. Zadnje dejanje pri učni uri bo neposredno podajanje povratnih informacij (pisno in ustno) in vrednotenje njihove vrednosti ter koristnosti.

Abstract: To give feedback on the work done orally or in writing ? Which has more long-lasting effects and which is of greater value to the recipient? We will search for answers by means of a lesson presenting students' speaking performance and then giving feedback from the teacher and students in e-portfolio.

We will review the forum in the e-portfolio (based on Mahara), where for each student a new thread was opened, and into which instructions for work and the evaluation criteria prepared by the students were included. The participants will look at what the authors of speaking performances have included into their topics, how other students evaluated their performance immediately after it, and how the authors managed to find the good elements of their work and made a plan for improving the bad ones.

The teacher's task of preparing students for such type of learning and giving feedback, as well as checking students's work and making comments on it, will be presented, too. The last part will be giving immediate feedback (in writing and orally) and estimation of its value and usefulness.

Ustvarjalna učilnica: From SIRikt with love – projektno sodelovalno delo

Creative Classroom: From SIRikt With Love – Collaborative Project Work

Simona Granfol • Gimnazija Jožeta Plečnika Ljubljana
Jerica Glavan • Srednja šola Josipa Jurčiča Ivančna Gorica
Bernardka Radej • Zavod Antona Martina Slomška Maribor
Andreja Pečovnik Mencinger • Srednja šola za gostinstvo in turizem Maribor
Maja Vičič Krabonja • Srednja ekonomska šola Maribor
Anita Poberžnik • Zavod RS za šolstvo

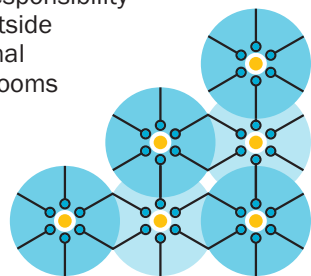
Povzetek: V ustvarjalni učilnici na otoku odprte učilnice bomo razvijali, preizkušali in evalvirali dejavnosti za pouk, ki omogočajo individualizacijo, sodelovanje, interaktivnost, inovativnost uporabe IKT, časovno in krajevno odprtost učenja ...

Udeleženci ustvarjalne učilnice se bodo preizkusili v dejavnostih projektno – sodelovalnega dela s podporo aplikacij in orodij IKT. Soočili se bodo z nalogo neposrednega poročanja o aktualnih dogodkih na konferenci SIRikt 2014. Nalogo bodo reševali po korakih projektno-sodelovalnega dela: viharjenje idej, načrtovanje, delitve nalog (vsak član skupine prevzeme odgovornost za določen del naloge), raziskovanje in ustvarjanje (tudi na terenu izven učilnice), predstavitve in poglobljene refleksije. Najbolj izvirne prispevke bomo objavili v družabnih omrežjih konference SIRikt 2014 in evropskega projekta Creative Classrooms.

Abstract: Being one of the work stations in the open classroom space, Creative Classroom aims to develop, test and evaluate classroom activities that promote individualization, collaboration, interactivity, innovative use of ICT, and overall time and space flexibility of learning.

The participants will be actively involved in the activities of collaborative project work, using ICT tools and applications. They will be expected to create a report about the SIRikt 2014 Conference directly from the scene of the event. The report should be created according to the following stages of project work: brainstorming, planning, role division (each group member takes responsibility for a specific part of the task), research and making (inside and outside of classroom), presentation and in-depth reflection. The most original contributions will be published via SIRikt 2014 and Creative Classrooms Lab Project social media.

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Interpretacija okolja: teren in/ali sodobne tehnologije

Interpretation of the environment: fieldwork and/or modern technologies

Aleš Smrekar, Mateja Šmid Hribar, Jernej Tiran •
Geografski inštitut Antona Melika, ZRC SAZU

Povzetek: V odprti učilnici bomo simulirali poskus interpretacije okolja ob reki Iški na območju Krajinskega parka Ljubljansko barje, od prikaza geomorfoloških značilnosti in pestrosti porečja, prek vloge in pomena podzemne in površinske vode do odnosa voda-človek nekoč in danes. Interpretacija reke Iške je zasnovana s privlačno učno potjo, z možnostjo nadgradnje z zabavnimi e-lekcijami in zanimivi terenskimi nalogami za učence, ki si jih učitelji predhodno pripravijo na spletnem portalu.

E-lekcije so pripravljene za tri starostne skupine, skladno z učnimi načrti, dodana pa so jim tudi didaktična priporočila. Raziskovanja se bodo udeleženci lahko lotili tudi s pomočjo spletne aplikacije terenskih nalog "Barjanska banka", ki so odlično izhodišče za terensko delo (več kot 50 nalog za tri starostne skupine učencev) in so namenjene predvsem učiteljem.

Abstract: In the Open Space we will simulate an attempt of the interpretation of the environment along the river Iška in the Ljubljana moors nature park: from presenting the geomorphological characteristics and diversity of the river basin, the role and importance of subterranean and surface water, to the relation water - man in the past and today. The interpretation of the river Iška has been designed with an interesting educational path, with the possibility of upgrading it with entertaining e-lessons and interesting fieldwork tasks for students, which can be created by teachers on a web portal. E-lessons are prepared for three age groups (according to the syllabi) with guidelines for teachers added.

The participants will be able to do the research with the help of a web application for fieldwork tasks called "Barjanska banka" that are a great starting point for the fieldwork (more than 50 tasks for the three age groups of students), and which are primarily intended for teachers.

Telovadba možganov na prostem

Outdoor Brain Exercise

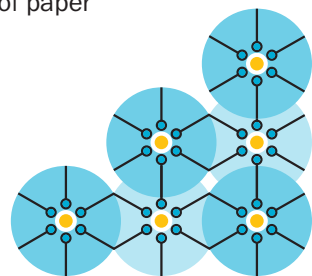
Nives Markun Puhan, Leonida Novak, Amela Sambolić Beganović •
Zavod RS za šolstvo

Povzetek: Udeleženci odprte učilnice se bodo odpravili na pot, ob kateri bodo na kontrolnih točkah skrite miselne naloge pod QR kodami. S QR kodami dosežemo učinek skrivnostnosti, saj naloge niso vnaprej berljive. Dejavnost bo potekala tako, da bo en član skupine na kontrolni točki s čitalcem na mobilni napravi QR kodo pretvoril v besedilo. Tega bo naglas prebral ostalim članom. Cilj bo rešiti naloge, ki spodbujajo k uporabi in povezovanju znanja s poudarkom na miselnih procesih na višjih taksonomskih stopnjah. Ob dejavnosti bodo udeleženci razvijali branje z razumevanjem, se urili v zbranem poslušanju, osredotočenosti na problem in iskanju izvornih rešitev.

Obdobjem ustvarjalnega razmišljanja bodo sledila obdobja telesne dejavnosti. S tem bomo omogočili možganom boljšo oskrbo s kisikom, pa tudi izmenjavo obdobja budnosti in koncentracije ter počitka. Udeležencem bomo pred pričetkom dejavnosti namestili še posebne naprave. O njih jim ne bomo nič vnaprej povedali: niti kako delujejo, niti čemu so namenjene. Spodbudili jih bomo k spremljanju vrednosti na zaslonu glede na način gibanja in k interpretaciji podatkov. Pripravljena dejavnost je primerna za učence razredne stopnje. Delavnico bomo izpeljali na prostem, zato opozarjamo udeležence na primerno udobno obutev in oblačila.

Abstract: The purpose of the paper is to present the group orientation hike, with mental tasks at checkpoints hidden under QR codes. The activity is suitable for different age groups. Adjustments depend on the abilities of the participants. Tasks are drawn up by the pupils themselves in the form of puzzles which encourage participants to use and integration of knowledge with an emphasis on higher mental processes. By using QR codes we achieved the effect of mystery because the puzzles are not readable to the naked eye. The participants develop reading skills, are trained in careful listening, focusing on the problem of puzzles, making their own solutions. Thus encourages their creative thinking. When the group arrives to the checkpoint, one member of the group converts the QR code to text with the reader on a mobile device and reads it to the other members. Each member writes down their own answer on a piece of paper and submits it to the teacher.

6. • Odprta učilnica: sodobni pristopi k učenju in poučevanju z IKT
• Open space: new approaches in learning and teaching with ICT



At the beginning of the orientation hikers also receive pedometers. This presents another mystery to them as the teacher gives them no information about this device: neither how it works, nor what was intended for. They monitor changes on the screen of pedometers and try to determine reasons for them. Pupils test different ways of movement and identify the context between ways of movement and the value on the device.

7.

Delavnice • Workshops

MojaObčina.si kot učni pripomoček

MojaObčina.si as a learning aid

Maša Ribnikar • PriMS d.o.o.

Povzetek: Portal **MojaObčina.si** se je na veliko slovenskih šolah že uveljavil kot najboljši način za obveščanje bližnje skupnosti. Šole imajo na voljo medij, prek katerega lahko pokažejo svoj prispevek k skupnosti. Tako lahko uporabijo portal za obveščanje o dogodkih, obenem pa poročajo o dejavnostih in uspehih učencev. Novice pa ne ostanejo le na spletnem portalu, ampak se širijo prek družabnih omrežij, prikazujejo se na občinskih spletnih straneh ter mobilnem portalu, občani dobijo tedenske e-novice, lokalna glasila pa novice izvozi v tiskano izdajo. Vse to le z enim vnosom novice!

Vendar **MojaObčina.si** šolam ponuja še veliko več: lahko ga izkoristijo kot prostor, na katerem učenci pridobivajo bistvene digitalne kompetence. **MojaObčina.si** je tako uporabljen kot medij, prek katerega učenci objavijo prispevke, ki nastanejo v okviru novinarskega krožka in interesna dejavnost se izza zidov šole preseli v virtualni prostor.

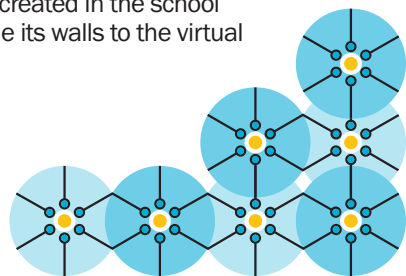
Ob veščinah pisanja se učenci naučijo tudi bolj specifičnih digitalnih veščin, kot je uporaba CMS sistema, priprava slik za splet, moč deljenja na družbenih omrežjih ipd. Naučijo se tudi pomena spoštovanja avtorskih pravic, še posebej pri uporabi slikovnega gradiva. Nenazadnje pa vsem lahko pokažejo rezultate svojega dela, kar zagotovo prinese zadovoljstvo in motivacijo za nadaljnje delo.

Med šolami, ki redno izkoriščajo možnosti portala **MojaObčina.si** so **Osnovna šola Kanal**, **Osnovna šola Frankolovo** in **Druga osnovna šola Slovenj Gradec**.

Abstract: The portal **MojaObčina.si** has established itself as the best way to inform local communities in many Slovenian schools. Schools can use the medium to show their very important contributions to the life of the community. They can use the web medium for event invitations as well as reports on their activities and especially student successes.

News aren't only displayed on the web portal, but are also featured on social media, municipality websites, mobile portal and weekly newsletter, while local papers can export the news to their printed edition. All this is possible with a single news entry!

MojaObčina.si offers much more. It can be used as a place where students acquire essential digital competencies. Students can publish articles, created in the school press club, which extends the schools interest activities outside its walls to the virtual space.



Besides developing writing skills, students will learn how to use a CMS system, prepare pictures for web, the power of social media ... They also learn the importance of respecting copyrights, especially when using pictures. Lastly the results of their work can be shown publicly, which leads to satisfaction and motivation for further work.

Among others, the schools Kanal primary school, Frankolovo primary school and primary school Druga osnovna šola Slovenj Gradec regularly use the features of the portal **MojaObčina.si**.

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Programiranje za učitelje-neprogramerje

Programing for teachers non-programmers

Saša Divjak • Fakulteta za računalništvo in informatiko, Univerza v Ljubljani

Povzetek: Delavnica NI namenjena tistim, ki programiranje že dobro obvladajo. Namenjena je učiteljem (predvsem fizike in matematike, lahko tudi drugih naravoslovnih in tehniških ved), ki bi se radi šele naučili osnovnih veščin, ki bi jim omogočale spreminjanje obstoječih računalniških animacij in simulacij, ali pisanje lastnih krajših programiranih primerov. V bistvu naj bi bila delavnica uvod v serijo kasnejših videokonferenčnih srečanj, serijo lastnih programerskih izkušenj in občasno skupno delo v računalniški učilnici.

Delavnica naj bi najprej poskrbela za motivacijo, pri čemer tudi učiteljem-neprogramerjem pride prav poznavanje osnov programiranja. Ogladali bi si nekaj zanimivih zgledov v originalni in spremenjeni obliki. Razbili naj bi tudi občutek, da je programiranje lahko le domena izkušenih programerjev. V nadaljevanju bomo spoznali nekaj različnih možnosti, kako lahko tudi neprogramer kaj malega sprogrмира. Končno se bomo posvetili dvema programerskima okoljema, ki sta primerni za začetnike: Python in JavaScript. Povedali bomo seveda, zakaj takšna izbira. V obeh primerih bo poudarek na preprostih, grafično podprtih primerih (2D in 3D grafika). Cilj delavnice je tudi podrobna določitev, v kakšni obliki in kdaj ter s kakšno vrednostno vsebino naj bi potekala kasnejša (večinoma videokonferenčna) srečanja.

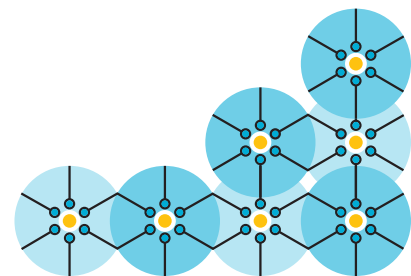
Zaželeno je, da bi imeli udeleženci delavnice s seboj svoje tablične ali prenosne računalnike.

Abstract: The workshop is NOT intended for those who have good knowledge of programming. It is intended for teachers (especially of physics and mathematics, as well as other science and technical subjects), who would like to learn about the basic skills, enabling them to modify existing computer animations and simulations, or to write their own short programmed examples. In fact, the workshop is intended to be an introduction to a series of subsequent meetings, video conferencing, a series of their own programming experiences and occasional collaborative activities in the computer lab.

First of all, the workshop will take care of participants' motivation, where the teachers non-programmers will be able to use their knowledge of basic programming. We will look at some interesting examples in the original and in the modified form. We would like to make them feel that programming is not only in the domain of experienced programmers. Secondly, they will learn about a few different options how a non-programmer can do some programming. Finally, we will focus on two programming environments that are suitable for beginners:

Python and JavaScript. Arguments will be presented why we have chosen the two. In both cases, the emphasis will be on simple, graphically supported cases (2D and 3D graphics). The aim of the workshop is also to set out the details about the form, time and content of the subsequent (mostly videoconferencing) meetings.

It is desirable for the participants of the workshop to have their own tablet or laptop computers.



Upravljanje z dinamičnimi spletnimi stranmi (PHP/MySQL) na Arnesovih strežnikih GVS

Managing dynamic web content on ARNES virtual servers

Miloš Gajič, Nejc Vičič • Arnes

Povzetek: Storitve gostovanja dinamičnih spletnih strani (PHP/MySQL) oziroma GVS, ki jo ponujamo na Arnesu, omogoča postavitev spletnih strani, e-učilnic in drugih spletnih aplikacij. Žal pa se še vedno dogaja, da možnosti, ki jih storitev ponuja, niso optimalno izkoriščene. Namen delavnice je uporabnikom predstaviti in poenostaviti postopek nameščanja in optimizacijo spletnih vsebin. Ogleдали si bomo, kaj uporabniki z gostovanjem lahko pridobijo, kakšne možnosti za interakcijo s spletnim strežnikom so na voljo (terminal, ftp, spletni vmesniki) ter skupaj skozi vajo pregledali različne postopke namestitve spletnih aplikacij.

Abstract: The service of dynamic websites roaming (PHP/MySQL) or GVS that we offer at ARNES, enables the layout of web sites, e-classrooms and other web applications. Unfortunately, the potential offered by the service is quite often underused. The purpose of the workshop is to present the users how to simplify the installation and optimize web contents. We will look at what users can obtain with roaming, what kind of opportunities for interaction with a web server are available (terminal, ftp, web interfaces) and through hands-on experience review various processes of installation of web applications.

Odprta knjiga – Virtualne aplikacije v šolstvu – Zakaj in kako?

Solution covering the field of Education – Addressing the need for a secure application virtualization that is accessible on demand

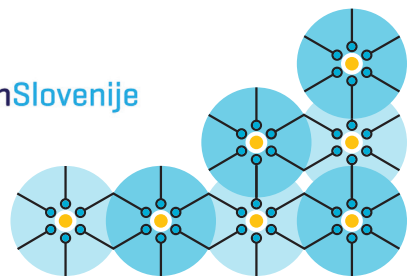
Tomaž Šmid • Telekom Slovenije
David Drogenik • Šolski center Ptuj

Povzetek: Odprta knjiga je sodobna rešitev, ki omogoča uporabo vseh aplikacij, ki jih uporabljate v izobraževalnem procesu. Virtualne aplikacije so zbrane na enem mestu, do njih lahko dostopate z vseh naprav ali lokacij, kjer je internetna povezava ali signal GSM.

Celotna infrastruktura izpolnjuje najvišje standarde kakovosti, vsi podatki v aplikacijah so skrbno varovani v varni sobi Telekoma Slovenije. Z rešitvijo Odprta knjiga lahko vzpostavite visoko učinkovito in moderno okolje za učenje, upravljanje računalniške opreme pa postane pregledno in enostavno. Uporaba storitve Odprta knjiga omogoča izgradnjo visoko funkcionalne in moderne učilnice, ki je poleg tega izjemno enostavna za uporabo. Telekom Slovenije s partnerji in z ekipo odličnih strokovnjakov nudi tudi vso potrebno računalniško opremo, tako da boste učilnice lahko opremili popolnoma na novo.

Abstract: Open book is a modern solution that allows the use of all applications used in the educational process. Virtual applications are collected at in one place, so you can access them from any device or location where there is an Internet connection or a GSM signal.

The entire infrastructure meets the highest quality standards, with all data in applications being carefully protected in a secure room of Telekom Slovenia. By Open book solution, you can create a highly efficient and modern learning environment in which management of computer equipment becomes transparent and easy. Using an Open book service enables building highly functional and modern/up-to-date classrooms, which are extremely easy to be used. Telekom Slovenia, with its partners and a team of excellent professionals, provides all the necessary computer equipment, so you can newly equip your classrooms as a whole.



Primer uporabe družabnega mreženja v šolstvu

An example of the use of social networking in education

Andrej Gorenjšček, Zoran Povh

Povzetek: Na delavnici boste spoznali, kako bi lahko s pomočjo rešitve IBM Connections na enostaven način povezali vse udeležence v šolstvu. Namen družabnega mreženja je poleg povezovanja tudi gradnja obsežne baze znanja, ki ostane na voljo za naslednje generacije.

Abstract: At this workshop you will learn how to use IBM Connections solution in order to connect participants of all educational institutions in a simple way. In addition to integration, the purpose of such social networking is construction of large-scale knowledge base, which remains available to future generations.

The Future of Learning

ibm.com/social-business



Ste še v dvomih, ali se vključiti v mednarodne sodelovalne projekte?

Ponujamo vam (eT)winning formulo!

Doubts about joining an international collaborative project?

Check the (eT)winning formula!

Dejan Kramžar • CMEPIUS, eTwinning ambassador

Povzetek: eTwinning je akcija Programa Erasmus+, namenjena sodelovanju evropskih šol in vrtcev. Šolam/vrtcem, učiteljem in učencem ponuja orodja za spletno povezovanje in mednarodne šolske projekte.

Delavnica je namenjena začetnikom v eTwinningu in tistim, ki eTwinning še ne poznajo. Udeleženci delavnice bodo spoznali, kaj ponuja eTwinning učiteljem in šolam/vrtcem, prednosti mednarodnega povezovanja s šolami/vrtci in primere dobre prakse.

Abstract: eTwinning is an action of Erasmus+ Programme that supports European school collaboration. It offers tools for on-line networking and international school projects.

The workshop is intended for beginners in eTwinning and those who do not know eTwinning yet. Participants will learn what eTwinning offers to teachers and schools/kindergartens, about benefits of international cooperation among schools/ kindergartens and examples of good practice.

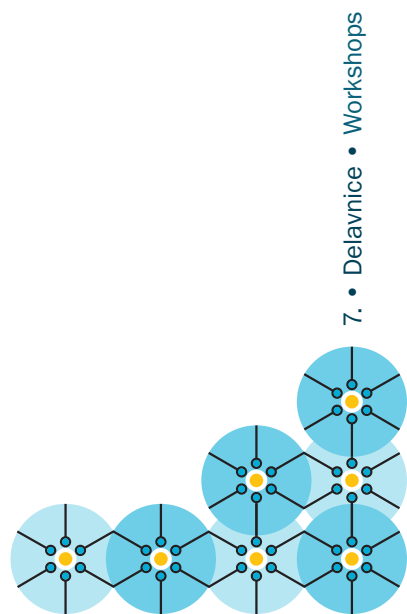
Male čarovnije s pomočjo sodelovalnih orodij

A Little Bit of Magic With Collaboration Tools

Arjana Blažič • CMEPIUS, eTwinning ambasadorica, Hrvaška

Povzetek: Udeleženci delavnice bodo spoznali paleto uporabniku prijaznih orodij 2.0, ki jih lahko preizkusijo z učenci in dijaki (v virtualnih okoljih ali v razredu). Delavnica se bo osredotočila na načine, kako motivirati in angažirati učence/dijake, da postanejo aktivni učeči se 21. stoletja.

Abstract: In this hands-on workshop participants will be introduced to an array of user-friendly web 2.0 tools which can be used to enhance collaboration among students in on-line and offline environments. The workshop will focus on ways to engage and motivate students to become 21st century learners.



SMART Notebook »Activity Builder« – Kreirajmo interaktivne aktivnosti za učence

SMART Notebook »Activity Builder« – Create interactive activities for students

Špela Logar • SMART Advocate

Povzetek: Učitelji se vsak dan srečujejo s težavo, kako pripraviti zanimivo in interaktivno vsebino za učence, ki so nenehno obdani z digitalnimi mediji ter interaktivnimi elementi. Kot pripadniki digitalne generacije učenci snov dosti hitreje, bolje in učinkoviteje dojemajo skozi interaktivne in multimedijske vsebine. Korak bližje k zanimivi in hkrati enostavni aktivnosti SMART v programski opremi SMART Notebook ponuja rešitev Activity Builder, ki vam jo bomo predstavili na delavnici.

Activity builder je orodje, v katerem lahko učitelj pripravi učna gradiva, s katerim se učenec na zabaven in zanimiv način uči ali obnovi znanje. Učitelj si v skladu z učno temo izbere način, kako pripraviti interaktivno vsebino. Z uporabo Activity Builderja učitelj ustvarja aktivnost, kjer učenec lahko povezuje, ureja, poimenuje vsebino, ali pa s tem orodjem ustvarja vsebino za utrjevanje oziroma preverjanje znanja.

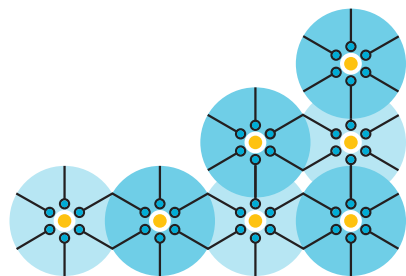
V skladu z učiteljevimi navodili učenci poskušajo posamezne predmete prenesti v pravo skupino, lastnosti katere določi učitelj sam. Če učenec zastavljene naloge ne reši pravilno, se posamezni predmet vrne na izhodiščno mesto. Uporabimo ga lahko za aktivnosti pri različnih predmetih. Na delavnici bodo konkretno prikazani primeri uporabe pri različnih učnih predmetih.

Abstract: Every day teachers are facing the problem of how to prepare an interesting and interactive content for their students, who are constantly surrounded by digital media and interactive elements. As members of the digital generation students comprehend the content much faster, better and more efficiently through the interactive and multimedia content. A step closer to an interesting yet simple activity the SMART Notebook software offers the Activity Builder solution, which will be presented at the workshop.

Activity Builder is a tool where a teacher can prepare a content which the student can use to learn or revise his knowledge in a fun way. In accordance with a topic the teacher chooses the way of setting the interactive content. By using the Activity Builder the teacher creates an activity where the student can connect, organize, label the content or use the content to create a revision activity.

According to the teacher's instructions the students try to organise individual

objects in the appropriate group, which has certain characteristics set by the teacher. If the student does not complete the task in a right way the individual object bounces back to its starting point. Activity Builder can be used for activities with various subjects. Examples of use with different subjects will be shown at the workshop.



Predstavitev orodij in funkcij programske opreme Hitachi StarBoard (za začetnike)

Live presentation of tools and features of Hitachi StarBoard Software

Simona Repnik • Lukvel

Povzetek: Cilj delavnice je pokazati, kako uporabljati programsko opremo Hitachi StarBoard za ustvarjanje pouka. Na njej bomo s pomočjo te programske opreme in uporabo njenih funkcij na didaktičen način in ustvariti celotno učno uro. Ciljna skupina delavnice so trenerji in uporabniki interaktivnih tabel, učitelji, učenci in drugi.

Abstract: The goal of the workshop is to show the use of Hitachi StarBoard Software for creating lessons and didactical content. Teh workshop is intended for trainers, teachers, students and others.



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Upravljanje z mobilnimi napravami

Management of mobile devices

Oliver Zofič • Microsoft Slovenia

Povzetek: S pomočjo sodobnih tehnologij postajata naše delo pa tudi prosti čas vse bolj mobilna. Spremenil se je način sodelovanja in komuniciranja. Da pa lahko uporabnikom pri načrtovanju njihovih aktivnosti omogočimo več svobode, moramo posebno pozornost nameniti upravljanju z mobilnimi napravami.

Abstract: With the help of modern technologies our work and leisure time are becoming increasingly mobile. The ways people collaborate and communicate have changed. However, if we want to allow our users to plan their activities freely, we must pay special attention to the management of mobile devices.

Sodelovanje med projektnimi partnerji v spletni učilnici TwinSpace

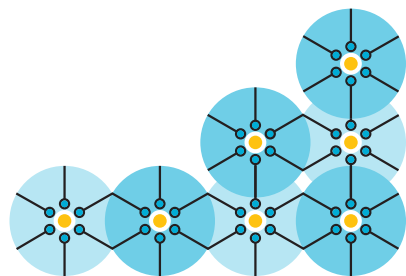
Collaboration among project partners in the virtual classroom TwinSpace

Irena Rimc Voglar • CMEPIUS, eTwinning ambasadorica

Povzetek: eTwinning je akcija Programa Erasmus+, namenjena sodelovanju evropskih šol in vrtcev. Šolam/vrtcem, učiteljem in učencem ponuja orodja za spletno povezovanje in mednarodne šolske projekte.

Delavnica je namenjena izkušenim eTwinners, ki si želijo na praktičen način spoznati skrivnost dobro organiziranega sodelovalnega projekta in kako učinkovito organizirati spletno učilnico TwinSpace. Sodelujoči bodo preizkusili nekatera orodja, ki so na voljo v spletni učilnici TwinSpace.

Abstract: eTwinning is an action of Erasmus+ Programme that supports European school collaboration. It offers tools for on-line networking and international school projects. The hands-on workshop is intended for experienced eTwinners who want to discover the secrets of a well-organized collaborative project and ways of effective organization of the virtual classroom TwinSpace.



SMART Notebook 2014 Advantage – Orodje, ki navdihuje

SMART Notebook 2014 Advantage – The tool which inspires

Aleš Celcar • STELJES

Povzetek: April 2014 je na področju programske opreme SMART Notebook postregel z veliko novostmi, ki učiteljem še olajšajo delo z interaktivno tehnologijo, hkrati pa postregel s precejšnjim številom dodatkov, ki so vključeni v osnovno različico SMART Notebook.

Na delavnici bomo spoznali novosti v SMART Notebook 2014 Advantage:

Text pen in Paintbrush pen: Želite urediti besedilo v SMART Notebook 2014 kar s pisalom? Dodajanje presledkov, brisanje črk/besed, vstavljanje besedila in zamenjava besedila.

Obrezovanje fotografij neposredno v Notebook 2014: Učitelji pogosto potrebujejo prilagojeno fotografijo. SMART Notebook 2014 po novem omogoča, da fotografijo uredimo, obrežemo in tako na enostaven način urejamo in prilagajamo fotografije svojim potrebam.

SMART 3D orodje: 3D orodje je v SMART Notebook 2014 že vključeno in prav zato bomo na delavnici spoznali, kako ga lahko uporabimo pri pouku in kje najdemo 3D vsebine.

SMART Notebook Math by Geogebra: GeoGebra je matematični program, namenjen podpori pri vseh ravneh izobraževanja.

SMART Response VE: Odzivni sistem Response VE bo prišel še kako prav učiteljem, ki želijo preveriti znanje oziroma sprotno delo učencev.

Xtreme Colaboration: Vzpodbudite sodelovanje in razpravo v svojo SMART Notebook učno uro z uporabo mobilnih naprav na nov in razburljiv način.

Abstract: In April 2014 SMART Notebook brought many novelties that make teachers' work with IT technology even easier and at the same time brings numerous new tools, which are included in the basic version of SMART Notebook.

The workshop will show the novelties of SMART Notebook 2014 Advantage:

Text pen and Paintbrush pen: Do you wish to edit your text in SMART Notebook 2014 with your pen? Adding space, deleting letters and words, inserting text and changing text.

Inspired Collaboration™

SMART®



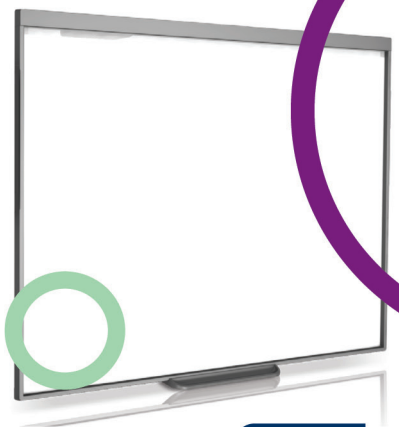
SMART rešitve za učni prostor

Način poučevanja je ravno tako pomemben kot snov, ki jo učimo. S pomočjo SMART tehnologij boste ustvarili bolj sodelovalno učno okolje ter omogočili učencem, da se lažje vključijo in učijo skupaj.

Naša interaktivna tehnologija: interaktivne table, zasloni in mizice, dokumentne kamere jim bodo v pomoč pri oblikovanju ključnih znanj in spretnosti, ki jih bodo potrebovali pri oblikovanju svoje prihodnosti.

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TECHNOLOGY WITH PURPOSE

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Cropping photos directly in SMART Notebook 2014: Teachers often need a cropped and edited photo. SMART Notebook 2014 enables you to edit a photo, crop it and simply adjust it to your needs.

SMART 3D tools: SMART Notebook 2014 includes 3D Tools and the workshop will show how to use them in a classroom and where 3D content can be found.

SMART Notebook Math by Geogebra: GeoGebra is mathematical programme which is meant for support of several levels of education.

SMART Response VE: Response VE is useful to the teachers who wish to create assessments, pop quizzes or tests for their students.

Xtreme Colaboration: Stimulate collaboration and discussion while incorporating mobile devices into your SMART Notebook lessons in new and exciting ways.



Deployment O365 in Student Advantage v praksi

Deployment O365 in Student Advantage in practice

Tadej Žlak • Microsoft Slovenia

Povzetek: Microsoft je predstavil novo prednost za izobraževalne ustanove, poimenovano Student Advantage, s katero lahko te svojim učencem ali študentom ponudijo najsodobnejše aplikacije Office brez dodatnih stroškov. Prednost je na voljo vsem izobraževalnim ustanovam, ki so licencirale paket storitev Office 365 ProPlus ali zbirko Office Professional Plus za svoje zaposlene. Izobraževalnim ustanovam je ob tem na voljo tudi brezplačna ponudba Office 365 Education z Microsoftovimi naprednimi storitvami v oblaku za e-pošto, sodelovanje in napredne komunikacije.

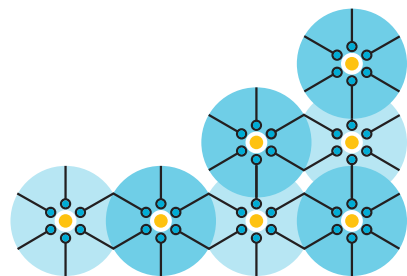
Predstavili vam bomo rešitev Oblak 365, ki nastaja v partnerstvu med zavodom Arnes, Šolo prihodnosti Maribor in podjetjem Microsoft. Rešuje izzive organizacij tako, da:

- povezuje Office 365 v federacijo Arnes AAI,
- omogoča samopostrežen princip dostopa do storitev za vaše uporabnike in
- poenostavlja upravljanje z licencami.

Abstract: Microsoft has introduced a new priority for educational institutions called Student Advantage, which they can use to offer their pupils or students state of the art Office applications at no additional cost. The advantage is available to all educational institutions that have licensed their package Office 365 ProPlus or Office Professional Plus for their employees. We also offer educational institutions free Office 365 Education advanced with Microsoft cloud services for email, collaboration and advanced communications.

We will present Cloud 365, a solution that is produced in partnership between Institute ARNES, School of future Maribor and Microsoft. It addresses the challenges of organizations so that:

- it connects Office 365 to the Federation Arnes AAI,
- it allows buffet principle of access to services for your users, and
- it simplifies license management.



ODPRTA KNJIGA



Storitev virtualizacije aplikacij

Storitev vam omogoča virtualizacijo aplikacij, ki jih uporabljate pri svojem delu, s čimer bo delovanje in vzdrževanje informacijske infrastrukture v vzgojno-izobraževalnih zavodih postalo cenejše in bolj obvladljivo. Rešitev sta pripravila Telekom Slovenije, d.d., in Unistar LC d.o.o. s sodelovanjem ekipe Vseposod ter partnerjema Citrix in Microsoft.

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Ali želite:

- **IZBOLJŠATI** kvaliteto vaših predavanj?
- **POENOSTAVITI** vsakodnevne administrativne obveznosti?
- imeti **DOSTOP** do vseh informacij **kjerkoli** in **kadarkoli**?

CELOSTNA REŠITEV ZA IZOBRAŽEVALNE USTANOVE



Če želite preizkusiti našo rešitev nas poiščite na konferenci  **SIRikt** pred konferenčno **dvorano A** v **hotelu Kompas**.

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Poleg večjih slovenskih podjetij, kot so Krka d.d, Lek d.d, Luka Koper d.d, Intereuropa d.d, OMV Slovenija d.o.o., Iskraemeco d.d., Adria Airways Tehnika d.d. ..., nam zaupajo tudi številne izobraževalne institucije, kot so: OŠ Dravlje, OŠ Dušana Muniha, OŠ Naklo, OŠ Prestranek, OŠ Trzin, OŠ Venclja Perka Domžale, Univerza v Ljubljani in Univerza v Mariboru.

Zaupajte nam tudi Vi.

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Hvala, ker ste z nami! • Thank you for being with us!

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