Uvajanje novih storitev v vzgojno-izobraževalne zavode

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V zadnjih leti se vzgojno-izobraževalni zavodi (v nadaljevanju VIZ) intenzivneje opremljajo z računalniško opremo. Z boljšo opremljenostjo z računalniško strojno opremo nastopa ugoden čas za uvajanje novih storitev v šole. Najprej je potrebno nove storitve opredeliti, določiti način in stroške vpeljave le-teh v VIZ in skozi pilotne projekte odkriti načine za povezovanje VIZ in optimalno uporabo novih storitev. Nato lahko sledi obsežno uvajanje novih storitev.

Ključne besede: internet, upravljanje vsebin, gradiva, e-izobraževanje, vzdrževanje, tehnična podpora

1 Uvod

V zadnjih letih je Ministrstvo za šolstvo in šport veliko sredstev omenilo opremljanju VIZ z računalniško opremo. Večino denarja je bilo vloženega predvsem v nakup računalniške opreme in nadgradnji ter vzdrževanju računalniških omrežij. Na ministrstvu se intenzivno razmišlja o prenovi Slovenskega izobraževalnega omrežja, poteka izvedbena faza razpisa za izdelavo e-gradiv, kupuje se didaktična programska oprema itd. Nastopil je ugoden čas za uvajanje novih storitev v VIZ.

Na pobudo posameznikov se je na Zavodu RS za šolstvo ustanovila razvojna skupina za uvajanje novih storitev v VIZ pod vodstvom Milana Podbrščka. Njene naloge so:

- definiranje stanja na področju uporabe informacijskih in komunikacijskih storitev v VIZ,
- preučitev možnosti uvajanja informacijske podpore timskemu delu na VIZ,
- preučitev možnosti in določitev pravil predstavitve in objavljanja gradiv na spletiščih VIZ,
- pregled novih storitev na področju IKT in potreb po uvajanju teh storitev v VIZ,
- določitev podlag za uvajanje novih storitev v VIZ idr.

2 Izbor storitev za uvajanje

Pri preučevanju storitev smo člani razvojne skupine za uvajanje novih storitev v VIZ(v nadaljevanju skupina) ugotovili, da lahko storitve razvrstimo v dve skupini. Prvo skupino predstavljajo storitve, ki bodo neposredno na voljo učiteljem, dijakom in drugim delavcem VIZ in prinašajo dodano vrednost. Za dobro delovanje le-teh pa je nujno potrebno uvesti tudi določene podporne storitve – te smo uvrstili v drugo skupino.

V prvo skupino smo uvrstili in preučevali naslednje storitve/aplikacije:

- upravljanje z dokumenti (datotečni strežniki),
- elektronska pošta,
- podpora sodelovalnemu/skupinskemu delu,
- upravljanje z vsebinami (portali),
- podpora e-učenju,
- šolski informacijski sistemi (redovalnica, dnevnik, evidenca),
- neposredno sporočanje,
- urnik,
- avdio/video konference idr.

Za izvajanje in boljše upravljanje z zgornjimi storitvami je potrebno razmišljati še o naslednjih storitvah:

- storitve preverjanja uporabnikov – z namenom povezovanja sistemov (avtentikacija),
- imenski strežniki (DNS),
- varnostno kopiranje,
- požarni zidovi,
- omejevanje dostopa do škodljivih vsebin,
- dodeljevanje internetnih naslovov,
- brezžični dostop do spleta,
- izdelava in overjanje digitalnih potrdil,
- centralni nadzor na storitvami idr.

Za vsako storitev je bil sestavljen nabor konkretnih aplikativnih rešitev, ki ustrezno storitev zagotavljajo. Nato je bil izdelan seznam tehničnih zahtev za poganjanje izbrane rešitve in potrebna znanja za upravljanje. Končno smo za vsako rešitev opredelili katera opravila bi lahko opravljal nekdo od zaposlenih na VIZ in katera morajo biti zagotovljena s strani ustrezno izobraženega kadra zunaj VIZ.

Pri odločanju o vpeljavi posamezne storitve je prevladalo mnenje, da se raje vpelje manj storitev in da te delujejo zelo stabilno. Le tako je mogoče pričakovati rabo novih storitev in rast uporabe IKT pri pouku.

3 Tehnične rešitve

Seveda so se v določanju načina vpeljevanja novih storitev pojavila številna tehnična vprašanja. Za optimalno razrešitev le-teh smo se povezali z vodilnimi računalniškimi podjetji v Sloveniji.

Pri masovnem opremljanjem šol z novimi storitvami je potrebno postaviti kriterije izbire storitev/osnovne platforme:

- stabilno delovanje,
- razširljivost,
- cena.

S stališča stabilnega delovanja storitev se je postavilo vprašanje za vsako storitev posebej ali naj bo nameščena na VIZ ali naj se storitev raje najame od zunaj. Odgovor za nekatere storitve določa narava storitve same, za druge storitve je odgovor težje sprejeti oziroma jo bo potrebno sprejeti za vsako VIZ posebej. Uvajanje vsake storitve namreč pomeni uvajanje določenih novih delovnih obveznosti – te se od storitve do storitve razlikujejo glede na naravo in zahtevnostjo. Pri uvajanju novih storitev v posamezno VIZ bo ministrstvo poskrbelo, da bo pri projektu sodeloval tudi ustrezno izobražen svetovalec, ki bo VIZ svetoval glede možnosti, morebitnih težav in zahtev pri uvajanju določene storitve.

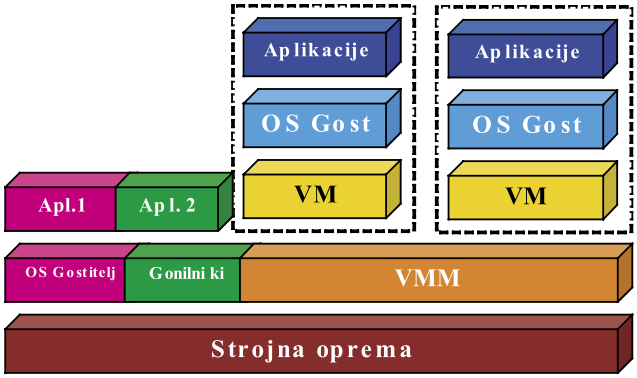
Iz tehničnih razlogov je bilo ugotovljeno, da bo potrebno VIZ za potrebe izvajanja novih storitev opremiti z strežniško računalniško opremo. Z namenom, da bi se strežniška računalniška oprema čim bolje izrabila je bilo predlagano, da bi se lahko, kjer je to mogoče, sosednji VIZ povezali med seboj v t.i. kampus in skupaj koristili opremo. S tem bi se drastično zmanjšali stroški oziroma za iste stroške nudile boljše oziroma večji nabor storitev. Končno povezovanje koristi tudi učnemu procesu na VIZ.

Pri skupni uporabi strojne opreme s strani več različnih organizacij se pojavi problem dostopanja do lastnih podatkov, upravljanja lastnih storitev itd. Poiskati je bilo torej potrebno rešitev, ki bi različnim organizacijam omogočala uporabo iste strojne opreme, hkrati pa prikazala isto strojno opremo vsaki organizaciji tako, kot da jo ima le ta sama zase. To se lahko doseže z uvedbo navideznih strežnikov.

Navidezni strežnik je strežnik, ki je zgrajen z uporabo posebne sistemske programske opreme, ki je postala dostopnejša v zadnjem času. Dejansko omogoča nameščanje več operacijskih sistemov na en fizični računalniški sistem. Ideja je torej v tem, da vsaka organizacija dobi določeno število navideznih strežnikov, dejansko pa vse organizacije izkoriščajo en fizični strežnik – isto strojno opremo. Uporaba take sistemske programske opreme tudi poenostavlja vzdrževanje računalniškega sistema saj je mogoče izvajanje varnostnih kopij kar celega izbranega navideznega sistema v celoti.

Vsako uvajanje informacijskih rešitev v organizacijo nujno vpliva na delo v organizaciji sami. Zato, da bi se VIZ znale spopasti z novimi izzivi je na zavodu bila vzpostavljena razvojna skupina za ravnatelje. Naloga skupine je predvsem sestava primerov dobre prakse pri vpeljavi novih storitev v VIZ, računalniško opismenjevanje ravnateljev, dajanje pobud za opremljanje VIZ ipd.

Ena od nalog skupine je tudi sestava podlag za usta-



Slika 1: Shema računalniškega sistema z dvema navideznima računalniškima sistemoma

navljanje šolskih strateških svetov za informatizacijo, ki se bodo sposobni srečati z novimi izzivi na področju informatizacije VIZ, ki bodo znali seznanjati zaposlene o obstoju novih storitev in jih usmerjati na izobraževanja za uporabo le-teh.

4 Pilotni projekt

Da bi projekt masovnega uvajanja novih storitev čim bolj nemoteno tekel, se pripravlja izvedba pilotnih projektov, kjer bi nove storitve uvedli v nekaj kampusov in tako preverili pravilnost sprejetih odločitev.

Cilji pilotnega projekta so sledeči:

- določiti organizacijsko strukturo projektnega tima pri uvajanju novih storitev za izbrani kampus – kako optimalno povezati VIZ, kjer je to mogoče,
- motivirati in izobraževati za uporabo novih IKT storitev,
- določiti seznam opravil ob uvajanju novih storitev v VIZ,
- določiti natančen seznam potrebnih znanj in kompetenc za upravljanje storitev,
- preskus delovanja računalniške strojne in programske opreme v smislu čim večje obremenitve,
- dopolnila za razpis za masovno uvajanje storitev v VIZ,
- izračun celotne cene lastništva za različne izbore programske in strojne opreme,
- v skladu z načrti, pričakovanji posameznih šol in zmožnostmi testirati tudi drugo strojno in programsko opremo.

Pilotni projekti se bodo izvedli v kampusih, ki so bili izbrani po različnih kriterijih, med drugim:

- zastopanost več regij,
- različne organizacije povezane s širokopasovno optično povezavo,
- v kampusu so VIZ različnih vrst,
- vse VIZ v kampusu so seznanjene z vsebino pilotnega projekta in so v uspešno izvedbo pripravljene vložiti napore,
- ustrezno izobraženi kadri idr.

5 Strateški vidik projekta

Projekt uvajanja novih storitev prinaša za VIZ številne prednosti za različne ciljne skupine:

- učitelji in učenci – so končni uporabniki večine storitev – pridobijo možnost e-izobraževanja, projektnega in timskega dela z uporabo IKT, dostop do novih storitev oziroma bolj kvalitetno uporabo obstoječih (elektronska pošta) itd.
- Ravnatelji – poleg storitev, ki jih uporabljajo učitelji in dijaki se za ravnatelje uvedejo še storitve za spremljanje projektov in nadzor nad resursi (učilnicami, opremo itd.), testirana bo tudi uporaba orodij za vrtanje po podatkih,
- skrbniki šolskega računalniškega omrežja in storitev – pridobijo orodja za nadzor omrežij in navodila, kako upravljanje omrežnih storitev čim ekonomičneje opravljati,
- Zavod RS za šolstvo – na podlagi rezultatov projekta bo mogoče kvalitetneje usmerjati delo organizatorjev informacijskih dejavnosti preko mreže mentorskih šol in sestavo didaktičnih seminarjev za učitelje,
- Ministrstvo za šolstvo in šport – izhajajoč iz rezultatov projekta bo mogoče izdelati model za splošno uvajanje novih storitev v vzgojno izobraževalne zavode,
- Arnes – pridobi rešitve za splošno vključevanje projekta BIO (Brezžično Izobraževalno Omrežje) vzgojno izobraževalne zavode,
- Zmanjšanje TCO (Total cost of ownership) z večjo uporabo IKT in zmanjševanjem stroškov.

6 Zaključek

Uvajanje novih storitev v VIZ je zahteven in obsežen projekt. Ministrstvo za šolstvo bo skušalo poskrbeti za opremljanje in tehnično podporo, Zavodu RS za šolstvo pa bo uvajanje podprl predvsem z ustreznim izobraževanjem in spodbujanjem učiteljev. Možnosti je veliko, nabor možnosti se bo s časoma verjetno še povečeval. V tej raznolikosti bo vsak učitelj moral najti tiste storitve, ki najbolj ustrezajo njegovemu stilu poučevanja oziroma, ki v učni proces doprinesejo največ.

Viri in literatura

Dolenc T.: ARNES Experience – Introducing ICT to Schools in Slovenia, dostopno na http://www.terena.nl/activities/schools/workshop-1/050222_td_arnes.pdf (15. 6. 2006).

Gerlič I.: Stanje in trendi uporabe informacijsko komunikacijske tehnologije v slovenskih srednjih šolah, dostopno na http://www.pfmb.uni-mb.si/raziskave/sr2005/ (15. 6. 2006).

LaQuey Parker T.: The internet and Schools: A Survey of Networking Activities, dosegljivo na http://www.ibiblio.org/cisco/tracy-article.html (15. 6. 2006).

Schweb G. (2006). Strategies to reduce TCO of ICT in schools, dostopno na http://www.eu-ripides.net/home/files/schwed-tco_of_school_ict-2006-05-25.pdf (15. 6. 2006).

Štempihar A.: Zakaj IKT projekti padajo? Dostopno na http://www.eu-ripides.net/home/files/ stempihar_a les.ppt (15. 6. 2006).

Janko Harej poučuje strokovne predmete na Tehniškem šolskem centru v Novi Gorici. Leta 1999 je diplomiral na Fakulteti za računalništvo in informatiko Univerze v Ljubljani. Deluje predvsem na področju spletnih. Kot višji svetovalec Zavoda RS za šolstvo sodeluje pri pripravi računalniških izobraževalnih programov za učitelje in koordinira delo skupine za preučevanje sistemov za upravljanje z vsebinami in skupine za uvajanje novih storitev v vzgojno-izobraževalne zavode.

Janez Mayer

The Lost Direction of the Bologna Renewal

The Bologna renewal of Slovenian university education does not follow the guidelines set by the EU. Universities are increasingly losing their independent status undermined by the dictation of politics (reduction of teachers' copyrights, gradual limiting of inscription to social studies). Duration of study seems to be more important criterion than its quality. There is no competition among teachers, and students seem to be far more interested in their social rights than in raising the quality of study process. At this moment, Slovenian university education is stuck in the cul-de-sac whereas graduation from a secondary school has lost its selective value. The main reason for above mentioned problems could be the absence of creative dialogue (not negotiations) among all partners participating in the university education system.

Key words: University education, Bologna reform

Rado Wechtersbach

Information Revolution in Education

The information technology revolutionary changes our everyday life. There is nothing as it was once and also education is changing and should change. Actual question, we are discussing about in this article, is what knowledge and skills are essential and should be developed during education in youth to qualify pupils for active cooperation and having the authority to decide in the coming world future society.

Key Words: education, information technology, information literacy

Ivan Gerlič

Coceptual Learning and Interactive Learning Materials

Teaching and learning with computers (ICT) encompasses her help in educational process everywhere there where is this perhaps and reasonable. Using ICT as educated accessory mean search of optimal elements for teaching efficiency and for better achieving teaching objectives. Learning process of science, mathematic and technical subjects in elementary school in many situations demands practically and problem solved work. In article we will show some didactic manners of preparing interactive web-oriented educated materials - papers (based on simulations - java applets).

Key Words: educational system, computers in education, science, information and communication technology (ICT), educational software, interactive teaching, simulations, applets, physlets, flashlets.

Metod Černetič,
Olga Dečman Dobrnjič

Education Planning and Management of Changes

Planning of education as a separate activity was relatively lately introduced on universal area of economic and social planning. The need for planning education has increased heavily with a need for regulation of explosion of population in late forties in last century. It has been reinforced with a growth of consciousness of value of economical value of education. Nowadays the connection between planning of education and economical development is getting more and more attention, which leads to increasing need for planning of development. Different strategies with fixed aims were developed. Optimal educational structures of a »state« or national macroeconomic for future technological development can not be predict even today. Reason for that are different: technological, economical in social. Therefore so-called hauristical approach or model of human resource planning has been developed (Rus, 1979: 247, Černetič, 1999: 86). Four presumptions are established in this model: social goals, relative social circumstances, human resource potential and needs. Quantitative and qualitative study of relationship between those variables of heuretical approach is a dynamic approach. In this text the following questions will be address: of methods and scenarios of educational planning, assumptions and predictions of planning of education, research and normative prediction of educational planning, areas and dilemmas of planning of education and goals of organizations and management of changes. All this questions are deeply connected with inclusion of Slovenia in EU and with all the processes that are going on in EU. Above all this is a deductive approach to two important social documents: National program of development of higher education and National program of development of research activity.

Key words: Planning, policy of education, goals, education, management of changes.

Gabrijel Devetak

Efforts to promote e-literacy

It is stressed in the Strategy of the development of the Republic Slovenia that there should be a more efficient consistency to pose among the market efficiency and a social responsibility of a modern state. It is to underline the development of information communication technology, ICT, and its meaning for economy which enables Slovenia to use potentials efficiently. Among basic there is to stress high investments in education and training to use ICT: ICT enables good quality of education and skills, but also it enables to activate all potentials that without ICT use would never be used. It is important that ICT also promotes adaptability to be competitive in globalization processes; it is also very supportative to access of life-long-learning. All exposed is of very specific meaning: it brings to values as employment, social inclusion, cohesion and social cohesion. That is why it is very important a quality of e-education and training, how to use e-skills way to bring to competitiveness all subjects and on all levels. Efforts to improve e-literacy are great and they are on all levels – EU, the level of state, sectors, projects and individuals. There are efforts to get resources to promote e-learning and e-skills as we are within the processes of Lisbon strategy and at the very beginning of the next financing perspective 2007-2013.

Key words: e-literacy, information communication technology, ICT, strategy, human potentials, partnership

Janko Harej

Introducing New Services in Slovenian Schools

In the last few years several efforts have been made to provide ICT to schools. Now, schools are better equipped with computer hardware, and time has come to introduce new services. New project team has been founded on National Institute of Republic of Slovenia for education with the following tasks: to select services to be introduced to schools, determine cost and proper ways of connecting schools and teachers together to increase the use of ICT in classroom. Some

tasks will be accomplished through the pilot project, where three school centers will be equipped with new technologies and guided to use it.

Key words: Internet, Content Management Systems, e-learning, e-content, technical support

Andrej Nekrep,
Jože Slana

The Perspective of E-education In Lifelong Learning of School Teachers

The new information-communication technologies are nowadays ingrained in all domains of education system. The new technologies are not only influencing the intellectual activities of the university and other schools on primary and secondary educational level (learning, teaching and research), but are also changing how the educational organisation is organised, financed and governed. The basic purpose of this research is to assess the perspective of e-education implementation in the system of pedagogical training and expert advanced study courses as a form of life-long learning of school teachers. We have to admit that electronic media and internet became a significant tool used also for educational purposes, especially for delivery of study materials and communication between tutor and learner. The results of this research show that the most important advantage of e-learning as emphasised by survey participants is the flexibility of place and time of study. The research also indicates that the basic objective (computer equipment, internet access, frequency of internet usage) and subjective (purpose of internet usage, willingness for making use of e-learning) conditions for e-learning implementation in Slovenian schools are satisfied. To conclude, the teachers are mostly aware of the advantages of distance life-long learning and would like to participate in such modern modes of education. We have to notice that pure distance education is extreme that rarely exists, so what we have meant here is the effective combination of traditional (classroom-based) and distance based education.

Key words: education, system of pedagogical training and expert advanced study courses (life-long learning), information-communication technology, computer literacy, e-education, professional development of teachers

Dejan Dinevski,
Janja Jakončič Faganel,
Matija Lokar,
Boštjan Žnidaršič

A Model for Quality Assessment of Electronic Learning Material

A model for the quality assessment system of electronic learning material is being developed by the group of experts at the National Education Institute of the Republic of Slovenia. The presented model is an important contribution to the improvement of the modern learning and educational processes. The standardization concepts and the specifics of the learning material are considered in the scope of the quality assessment procedure. The presented model defines the electronic learning material classification, its description and the criteria for its assessment. The steps for collection of e-learning material linked with the phases of assessment procedure are proposed in the paper. In order to round up the topic the presented model is tied to the national strategy of e-learning which is currently going trough the phase of public hearing.

Keywords: Quality, learning objects

Marjan Rodman,
Vladislav Rajkovič

Teaching Decision-making Knowledge in Primary School

Making decisions is a process within which we choose among different possibilities and is one of human activities that marks us most. Making decisions represents the essence of direction and leadership in everyday life. This can be noticed on all levels from an individual across business systems and the state to the global society. Despite this fact we cannot find very much written about the process of making decisions in our school curricula. Perhaps the problem is to offer elements appropriate from the content and pedagogical point of view. The knowledge technologies offer the concrete solutions and support to help making better decisions.Making complex decisions is a hard process. At Dušan Munih Primary School Most na Soči we decided to try with teaching of skills how to make decisions. First we made a model for teaching such skills at a primary school. Then we worked out a teaching plan and a suggestion for the programme of lessons and prepared the material to be used in the classroom. After we had checked the suitability of its introduction, we measured the efficiency of our work with a questionnaire.

Key words: education and instruction, computer science, nine-year primary school, multi-parametric decision making, expert systems, DEXi

Andrej Šorgo,
Saša F. Kocijančič

School Science Experiments: a Bridge between School Knowledge and Everyday Experiences

In Slovene grammar schools (gimnazija), Science is separated into three subjects: Biology, Chemistry and Physics. Correlations between the subjects are weak or even non-existent. All three subjects have only one thing in common: they are mostly academic, and barely connected with everyday phenomena and experiences. A consequence of this approach is that the knowledge of the students is patchy, and they are unable to use gained knowledge to explain the nature around them. In vocational schools the situation is completely different. School subjects are heavy interconnected with practice, but a scientific phenomenon is seen as an appendix to the curriculum. The authors are trying to overcome this situation at their schools with the introduction of computerized experiments into the teaching of Biology and Physics. Experiments are constructed in such a way, that they can be used with practically identical setups at two different types of school, and within two different subjects. The difference is in the context and purpose of the experiments. In such a way, the authors are trying to overcome a gap between school science and the everyday experiences gained at homes or in the workplace.

Key words: computerized experiments, e-prolab, biology, physics, science, grammar school, vocational school

Tjaša Kampos

Experiment as a Visualization Tool for Active and Qualitative Learning

Experiment in the school has strong visual effect on the children, therefore it should not be use as a motivational factor in