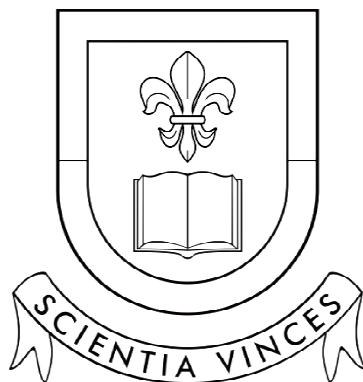


**DAUGAVPILS UNIVERSITĀTE  
DAUGAVPILS UNIVERSITY**



***DAUGAVPILS UNIVERSITĀTES  
57. STARPTAUTISKĀS  
ZINĀTNISKĀS KONFERENCES  
TĒZES***

***ABSTRACTS OF  
THE 57<sup>th</sup> INTERNATIONAL  
SCIENTIFIC CONFERENCE OF  
DAUGAVPILS UNIVERSITY***

DAUGAVPILS UNIVERSITĀTES  
AKADĒMISKAIS APGĀDS „SAULE”  
2015

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Daugavpils Universitātē docētāju un studējošo zinātniskās konferences notiek kopš 1958. gada. Konferencēm ir starpdisciplinārs raksturs un tajās piedalās gan studējošie, gan arī ievērojami zinātnieki no dažādām pasaules valstīm. Daugavpils Universitātes 57. starptautiskās zinātniskās konferences pētījumu tematika ir ļoti plaša – eksaktās, humanitārās, izglītības, mākslas un sociālo zinātņu jomās.

Krājumā *Daugavpils Universitātes 57. starptautiskās zinātniskās konferences tēzes = Abstracts of the 57<sup>th</sup> International Scientific Conference of Daugavpils University* apkopoti materiāli, kas tiks prezentēti konferencē organizētajās darba grupās 2015. gada 16.-17. aprīlī un kas atbilst konferences formālajām prasībām.

Krājuma veidotāji saglabāja tēžu lingvistisko un gramatisko struktūru.

Par norādītajiem faktiem, izteiktajiem viedokļiem un lietoto terminoloģiju atbild tēžu autori.

The annual scientific conferences at Daugavpils University have been organized since 1958. The themes of research presented at the conferences cover all spheres of life. Due to the facts that the conference was of interdisciplinary character and that its participants were students and outstanding scientists from different countries, the subjects of scientific investigations were very varied – in the domains of exact sciences, the humanities, education, art and social sciences.

The Collection of Abstracts of the 57<sup>th</sup> Scientific Conference of Daugavpils University contains the abstracts on researches, which will be presented in the corresponding work groups organized within the framework of the conference in April, 16-17, 2015. In the abstracts published in *Daugavpils Universitātes 57. starptautiskās zinātniskās konferences tēzes = Abstracts of the 57<sup>th</sup> International Scientific Conference of Daugavpils University* we have preserved the authors' style (linguistic and grammatical structures), and the authors themselves are responsible for the facts and opinions reflected and the terminology used in their abstracts.

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## VĒSTURES DAŽĀDĀS DIMENSIJAS: KULTŪRA, IZGLĪTĪBA, PRESE, POLITISKĀS UN MILITĀRĀS NORISES, DZĪVE PILSĒTĀ

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## VARIOUS DIMENSIONS OF HISTORY: CULTURE, EDUCATION, PRESS, POLITICAL AND MILITARY PROCESSES, LIFE IN CITY

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*Dardega Legzdiņa<sup>1,2</sup>, Gunita Zariņa<sup>1</sup>, Arturs Vīksna<sup>3</sup>, Lauma Bauermeistere<sup>3</sup>*

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### INTERDISCIPLINARY RESEARCH IN BIOARCHAEOLOGY: RECENT PALAEODIET STUDIES WITH STABLE ISOTOPE ANALYSIS METHOD IN LATVIA

Stable isotope analysis is a chemical analysis method that can be used on a variety of samples for addressing a number of questions. In bioarchaeology stable isotope analysis method was introduced in 1970s. Since then the method has been proven to be useful for solving different questions, especially concerning those on palaeodiet and migration of the prehistoric and historic people.

Several stable isotope analysis have been applied to Latvian bioarchaeological material from the Repository of Bioarchaeological Material at the Institute of Latvian History. Those studies have been held in collaboration with different foreign specialists and laboratories (Sweden, Great Britain, Finland). The results have been promising, as the preservation of several prehistorically and historically significant bioarchaeological collections is remarkable.

Until recently, there was no possibilities to perform stable isotope analysis in Latvia, as there was no isotope ratio mass spectrometer in Latvia. However, the year 2015 should be considered as the turning point in this research field in Latvia, as the Faculty of Chemistry of the University of Latvia has now obtained the necessary instrument for the analysis. Therefore the Institute of Latvian History and the Faculty of Chemistry have established scientific collaboration to apply stable isotope analysis to the bioarchaeological material. This paper will be a presentation of the first results of this collaboration.

***Guna Dancīte***

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### LIELĀ LUDZAS EZERA UN SISES APMETNES KAULA UN RAGA RĪKU SAVRUPATRADUMU KOMPLEKSS

Referātā „Lielā Ludzas ezera un Sises apmetnes kaula un raga rīku savrupatradumu komplekss” aplūkotas divas īpašas akmens laikmeta atradumu koncentrācijas teritorijas, kas atrodas ģeogrāfiski atšķirīgās vietās – Lielais Ludzas ezers – Austrumlatvijas daļā, bet Piejūras zemienē plūst Užavas upe, kuras krastos atrodas Sises apmetne. Pie tam – visu atradumu vidū īpaši izcelti tieši savrupatradumi jeb nejauši atrasti priekšmeti, kas savulaik bijuši cieši saistīti ar apmetni vai kapulauku, bet dažādu izmaiņu rezultātā zaudējuši sasaisti ar sākotnējo kontekstu.

Analizējot atrasto rīku izejmateriālu, secināts, ka Lielā Ludzas ezera krastos galvenokārt medīti brieži, aļņi un meža cūkas, savukārt Sises apmetnē par rīku izejmateriāliem kalpojuši staltbriežu kauli un

ragi. Jāsecina, ka bagātais staltbriežu kaulu un ragu skaits Sises apmetnē vairāk raksturīgs Baltijas jūras piekrastes apmetnēm Dānijā un Vācijā, kamēr briežu, mežacūku un aļņu populācijas daudzums – mezolītam Latvijas austrumu daļā.

Lielā Ludzas ezera krastos lielu daļu atradumu pārstāv zvejas rīki, dažkārt to formas ir unikālas Latvijas arheoloģiskā materiāla kontekstā. Savukārt Sises apmetnes raksturs ir atšķirīgs – tajā ir daudz saimniecības un medību rīku, tomēr zvejas rīku maz. Kā arī atradumu koncentrācijas vieta pagaidām noteikta aptuveni. Iespējams, ka apmetnes teritorija ir ļoti tuvu upes krastam vai pat zem tās, kas nozīmē, ka vieglākie rīki var būt aizskaloti.

Sises apmetne izceļas ar vairāku mākslas priekšmetu atradumiem. Kaula un raga priekšmeti pēc to izgatavošanas tiek dekorēti. Pie tam tajā īpaši dekorētie priekšmeti ir ar necīgām apstrādes pēdām, kas liecina, ka tie izmantoti vai nu mīkstu materiālu apstrādei vai arī nav izmantoti kā darba rīki, bet bijuši kulta priekšmeti.

Analizējot Sises apmetnē atrastos savrupatradumus, jāsecina, ka šī apmetne visintensīvāk apdzīvota vidējā un vēlajā mezolītā, kā arī agrā neolīta sākumā, par ko liecina veiktās C14 analīzes vairākiem rīkiem, kā arī analogijas ar citviet atrastiem, tipoloģiski līdzīgiem rīkiem.

Lielais Ludzas ezers ticis apdzīvots jau kopš agrā mezolīta par ko liecina atrastais zivju šķēps, kā arī citi rīki. Ezera krastos esošās apmetnes nav tikušas apdzīvotas vienlaicīgi, par to liecina apmetnēs atrastās rīkus formas. Pēdējie datējamie rīki liecina par apmetnes apdzīvotību līdz pat vēlajam neolītam.

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## **EMIGRATION THROUGH THE PORT OF LIEPĀJA (DURING THE PERIOD OF LATE 19TH CENTURY AND THE BEGINNING OF 20TH CENTURY)**

Economical situation, political regime, national policy were the main reasons that started emigration movement in the Russian Empire at the end of the 19th century and early 20th century. People massively emigrated to America, Australia, where there was a lot of free land, as well as rapid industrial development, which required a lot of workers. In the late 19th century and early 20th century Liepāja developed into one of the most important centers of emigration in the Russian Empire. Emigration until World War I took place on a vast scale, which contributed to the development and prosperity of Liepāja.

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## **THE TECHNOLOGIES OF THE GERMAN ARMY IN THE BATTLE NEAR DAUGAVPILS IN 1915: THE PERSPECTIVE OF LATVIAN PRESS**

In the literature it is believed that the success of the German army at the beginning of the First World War (1915) was due to its technological superiority. This view was also expressed in the Latvian press that widely described the use of different weapons in Daugavpils in 1915. Readers got to know about the heavy use of German artillery, about railway line installations and the use of large amounts of machine guns, of planes and zeppelins, and of poisonous gas. At the same time, the Latvian press also searched for other causes of the failure of the Russian army.

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## **DAUGAVPILS CIETOKSNIS LATVIJAS PRESES MATERIĀLOS: 1920–1924**

Daugavpils cietoksnis mūsdienās ir valsts nozīmes kultūrvēsturisks piemineklis – fortifikācijas komplekss ir lielu vēsturisku, arhitektūras, kultūras un arī dabas nozīmi. Tā pētniecībā svarīgi ir izmantot plašu vēstures avotu bāzi. Nozīmīgs avots pagātnes pētniecībā ir periodiskā prese (laikraksti, žurnāli, kalendāri). Latvijas Republikas laikā (1918–1940) tika izdots plašs periodisko izdevumu klāsts. Daugavpilī pirmais laikraksts latviešu valodā sāka iznākt 1924. gada septembrī. No šī viedokļa interesi izraisa preses informācijas klāsts par Daugavpils cietoksni līdz 1925. gadam, kas tika publicēts Rīgas un citu pilsētu laikrakstos.

Pētījuma mērķis ir atklāt, kā šajā laikā posmā Latvijas prese iepazīstina sabiedrību ar Daugavpils cietoksni.

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## **SKOLA UN SKOLOTĀJS LATGALĒ, 1920–1924: LATVIEŠU IZGLĪTĪBAS IESTĀŽU IZVEIDE UN DARBĪBA**

Pēc Latvijas Republikas neatkarības proklamēšanas 1918. gada 18. novembrī, aktualizējās jautājums par nacionālās izglītības sistēmas izveidi. Sevišķu uzmanību visu līmeņu skolu tīkla attīstībai, pedagoģiskā personāla organizēšanai un iedzīvotāju iesaistīšanai izglītības iestādēs pievērsa Latgalē, kurā latviešu kultūras un izglītības attīstība bija ilgstoši ritējusi stingras Krievijas impērijas pārkrievošanas politikas ietekmē, tādējādi radot ne tikai atšķirīgu, bet arī zemāku iedzīvotāju izglītības līmeni nekā pārējos Latvijas kultūrvēsturiskajos novados.

Skolu uzdevums Latgalē neaprobežojās tikai ar skolas vecuma bērnu audzināšanu un izglītošanu, bet bija ievērojami plašāks, pildot arī lokālu kultūras centru funkcijas, savukārt ievērojamais vietējo latviešu kultūras darbinieku trūkums, uzlika skolotājiem papildus pienākumus – kļūt par daudzfunkcionāliem sabiedriskajiem darbiniekiem, kuri ar savu mērķtiecīgu un sazaroto darbību veicināja Latgales iedzīvotāju vispārējā kultūras un izglītības līmeņa paaugstināšanu. Pētījumā tiks aplūkota latviešu izglītības iestāžu darbība Latgalē, īpašu vērību pievēršot tādiem, ar sociālo vēsturi saistītiem, aspektiem kā skolu materiāltehniskais nodrošinājums, skolotāju darba un skolēnu mācību vide, skolotāju dzīves apstākļi un tos noteicošie faktori, kā arī skolotāju (kā profesijas pārstāvju) vieta sabiedrībā.

Referāts balstīts Latvijas Valsts vēstures arhīva, Latvijas Nacionālās bibliotēkas Reto grāmatu un rokrakstu krājuma vēstures avotos, tāpat referāta tapšanā plaši izmantoti periodiskie izdevumi (žurnāls „Latgolas Škola”, „Izglītības Ministrijas mēnešraksts”, laikraksti „Latgalīts”, „Brīvā Zeme”, u.c.), kā arī vēstures un pedagoģijas zinātņu literatūra.

**Daira Boļšija**

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## **LNARZVA FONDS NR. 371 LUDZAS APRINĶA IZPILDU KOMITEJAS DOKUMENTU (1944.–1949. GADAM) ANALĪZE**

Ludzas aprinķa izpildu komiteja izveidojās 1944. gadā un pastāvēja līdz 1949. gadam, kad to 1949. gada 31.decembrī administratīvi teritoriālās reformas rezultātā likvidēja. Ludzas aprinķa izpildu komiteja ietilpa Latvijas PSR sastāvā.

Darba autore pētīs un apkopos informāciju par Ludzas apriņķa izpildu komitejas darbību laika periodā no 1944. gada līdz 1949. gadam, analizēs fonda dokumentus, dokumentos pieejamo informāciju, kā arī fonda vērtību.

Fonda dokumentu analīze. Fondam Nr.371 ir piešķirta 2 kategorija, tā ir sevišķi vērtīgo dokumentu kategorija. 2 kategorija ir piešķirta tāpēc, ka dokumenti satur informāciju par padomju varas iestāžu, organizāciju, uzņēmumu vadošajiem darbiniekiem, atklāj kadru komplektēšanas politiku pēc Otrā pasaules kara. Dokumenti atspoguļo padomju okupācijas varas pārvaldes veidošanos apriņķī, saimnieciskās, sociālās un kultūras dzīves reorganizāciju.

Dokumentu fiziskais stāvoklis ir apmierinošs. Pārsvarā dokumenti uzrakstīti ar roku, kā arī mašīnrakstā, krievu gan latviešu valodā. Dokumenti laika gaitā ir nodzeltējuši, vietām grūti salasīt, izplūdusi tinte.

Fonda Nr.371 raksturojums. Fondam ir divi apraksti, viens ir par vadības rīkojumiem, saimniecisko darbību, sēžu protokoli, glabājas pastāvīgi, otrs ir par personālsastāvu, glabājas 75 gadus.

Fondam ir arhīviskā, vēsturiskā un administratīvā vērtība. visi fonda dokumenti ir noformēti atbilstoši dokumentu glabāšanas prasībām.

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## **ACTIVITIES OF CULTURAL AND EDUCATIONAL INSTITUTIONS IN DAUGAVPILS (1944–1953) AS REPRESENTED IN THE DOCUMENTS FROM THE LNA DZVA COLLECTION**

After the Second World War several institutions continued or restored their activities in Daugavpils, whose function was not only to entertain, but also to educate public: theater, museum, house of culture and cinema. Peoples' education was considered by the Communist Party as one of the most effective means of the sovietization. Therefore both the Communist Party and the Soviet authorities tried to use aforementioned institutions for the communist propaganda and controlled their activities. At the Regional State Archives of Daugavpils which is a territorial unit of the National Archives of Latvia (hereafter - LNA DZVA) are available documents of Daugavpils City Council Executive Committee (fund 202) and the Cultural department of Daugavpils City Council Executive Committee (fund 154) as well as documents of separate Daugavpils cultural and educational institutions: Local History and Art Museum (fund 144), Russian drama theater (fund 122), House of culture (fund 860), Cinema department (fund 1121). Archival materials allows to judge about institutions' activities under the Communist Party leadership. The purpose of the paper is to reveal information potential of the documents from the LNA DZVA funds and to determine the importance of archival documents in the study about activities of cultural and educational institutions in Daugavpils (1944–1953).

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## **ARHĪVA DOKUMENTI PAR APTIEKU VĒSTURI DAUGAVPILĪ, 1944.–1991. G.**

Referāta „Arhīva dokumenti par aptieku vēsturi Daugavpilī, 1944.–1991. g.” mērķis ir izpētīt visu pieejamo informāciju Daugavpils zonālajā valsts arhīvā par Daugavpils aptiekām no 1944. gada līdz 1991. gadam un sniegt pieejamās informācijas apskatu. Darba uzdevumi ir izpētīt Daugavpils zonālajā valsts arhīvā pieejamos fondus par aptiekām, noteiktajā laika posmā, izpētīt un apkopot visu pieejamo literatūru par Latvijas PSR un Daugavpils aptieku tīklu 20. gadsimta ietvaros, precīzāk no 1944. g. – 1991. g., savāktās informācijas aprakstīšana. Referātam piemīt aprakstošs stils, tiek noteikts arhīva fondu informatīvais potenciāls, netiek veikta dziļā pieejamās informācijas analīze kādā noteiktā jautājumā.



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## **VECRĪGAS PILSĒTBŪVNICĪBAS KULTŪRAS MANTOJUMA SAGLABĀŠANA UN FUNKCIONĀLA IZMANTOŠANA (1948–1983)**

Pilsētbūvniecības pieminekļi ir specifiska un savdabīga kultūras mantojuma grupa, kas sevī ietver ne tikai māksliniecisko un arhitektonisko formu daudzveidību, bet arī kalpo kā sabiedrības spogulis, kas vēstures gaitā ir veidojusi un attīstījusi pilsētvidi. Pilsētbūvniecības pieminekļi sevī ietver atsevišķas ēkas, ēku grupas, kvartālu apbūvi, ielu un laukumu tiklojumu, pilsētas zaļo zonu, ūdenstilpnes, kā arī ainavu un siluetu.

Latvijā nozīmīgākais un plašākais pilsētbūvniecības piemineklis ir Vecrīga, kas 1997. gadā tika iekļauta UNESCO Pasaules mantojuma sarakstā.

Līdz ar Latvijas Republikas neatkarības atgūšanu arvien lielāka uzmanība tika pievērsta Vecrīgas, kā kvalitatīvas un modernas dzīves telpas veidošanai, kas balstīta uz ilgtspējīgas attīstības principiem. Šie principi paredz kultūrvēsturisko vērtību autentiskuma un nozīmes saglabāšanu, kā arī pilsētvides labiekārtošanu un funkcionālu izmantošanu.

Mūsdienās ir izstrādāti vairāki Rīgas vēsturiskā centra saglabāšanas un attīstības plāni, kuri no atbildīgo institūciju puses tiek postulēti kā oriģinālas pilsētplānošanas teorētiskās koncepcijas, kurām Latvijas vēsturē nav precedenta. Tomēr ir iespējams izsekot samērā senai Vecrīgas pilsētbūvniecības kultūras mantojuma saglabāšanas vēsturei.

Kā pētījuma sākuma punkts ir izvēlēts pirmais Vecrīgas reģenerācijas projekts, kas apstiprināts 1948. gadā, bet kā noslēdzošā robeža tiek pieņemta 1983. gadā apstiprinātais Vecrīgas reģenerācijas projekts. Pētījumā tiek analizētas projektos ietvertās pilsētbūvniecības kultūras mantojuma saglabāšanas un attīstības koncepcijas, ekonomiskais pamatojums un projektu realizācijas shēmas. Projekti tiek aplūkoti kontekstā ar Eiropā un PSRS pastāvošajām pilsētbūvniecības kultūras mantojuma saglabāšanas teorētiskajām nostādnēm un praksi. Projektu analīze atspoguļo valsts politiskās, ideoloģiskās un ekonomiskās situācijas ietekmi uz pilsētplānošanas teorētisko un praktisko koncepciju pamatnosacījumiem.

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## **DEATH MASKS AS A HISTORICAL SOURCE IN THE TERRITORY OF LATVIA**

Death mask is portrayal of dead persons face in plaster or in other material, and its purpose is to commemorate person who has passed away. Tradition of death mask making has a long history in Europe, and as a group of historical sources has been looked upon in expositions and catalogues in museums. In Latvia this tradition has never been researched, although museums of Latvia have significant amount of death masks made for Latvians in their collections – more than 120 casts. By looking at this group of historical sources, we can see how this tradition expressed itself in Latvia. Firstly, death masks show us who were the people important to society as whole. Number of death masks as commemorative symbols implies to group of people most important in context of Latvian history. Secondly, casts reveals techniques how they were made. When you look at masks, it shows their main function – serve as object that can be demonstrated on the wall or on the table. Thirdly, in rare occasions death masks can reveal how the persona has died. Fourthly, by looking at how many and to whom masks have been made in certain periods of Latvian history, starting from independent Republic of Latvia till nowadays, it is possible to trace, who were imitators of death mask making and how changing political power has effected death mask making tradition in the territory of Latvia.

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## **НИДЕРКУНСКАЯ ОБЩИНА И ЕЕ ИСТОРИЯ**

Нидеркунская община – одна из староверских общин города Даугавпилса, с богатой историей, была основана в начале 19-ого века, и долгое время у нее не было определенного здания для совершения молитв. Только в 1905 году представители общины стали ходатайствовать о получении разрешения на строительство храма. И уже в 1907 году был построен и освещен храм во имя Благовещения Пресвятой Богородицы и Св.Николаи.

Цель работы: изучить историю Нидеркунской общины, выяснить имена наставников, оценить вклад каждого из духовных наставников общины в ее развитие и укрепление.

В 2007 году отмечалось 100-летие общины, и поэтому, основные материалы, использованные в работе, – это личный архив духовного наставника Васильева Василия Ефимовича, которые он собирал в архивах города Даугавпилса, Риги, и др.городах.

В процессе работы были проанализированы и структурированы эти архивные материалы. Особое внимание уделено празднованию 100-летия общины: подготовке к празднику, праздничные мероприятия, а также итоги работы общины под руководством духовного наставника Васильева Василия Ефимовича.

В процессе работы были проанализированы хранящиеся в архиве моленной книги записей крещения, венчаний, исповедей и погребения. Эти материалы позволяют установить, какое количество людей посещают ежегодно исповедь, как часто крестят детей, какие имена дают им при крещении, как часто проходит таинство венчания в моленной.

Работа позволяет проследить не только историю общины, но и культуру староверия, и сохранение староверских традиций. В качестве объекта изучения нами была выбрана именно Нидеркунская община, как удаленная от города, имеющая свои традиции и особенности.

История общины не стоит на месте. Пройдет время, и сменится духовный наставник, и тогда появятся новые порядки и правила, а какие-то останутся не изменными. Дальнейшее изучение общины позволит их зафиксировать.

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## **EBREJU RELIĢISKO DRAUDŽU GARĪGĀ DZĪVE LATVIJAS PSR (1944–1964)**

The revival of the Jewish religious communities began already in 1944, when the first Jews returned to Latvia. By April 1949, when the registration process of the religious communities was completed, 7 Jewish religious communities were officially registered in LSSR. In 1964 three of them were struck off the register as a result of Soviet policy.

The surveys of the worship attendance give an insight into the communities' activities. Not all of the communities did have daily prayers (three times a day) due to insufficient number of believers. However, on biggest religious holidays prayers were particular vivacious. The highest attendance was observed on autumn holidays (Rosh-Hashanah, Jom-Kippur, Simchat-Torah) and on Pesach. The performance of foreign cantors made the prayers more intensified and the number of prayer participants on these holidays remained outstanding during all the period; besides a significant part was youth, which mostly participated in Simchat-Torah. Jews of the cities, in which there was no opportunity to gather for prayers on the holidays, usually visited the nearest community. Regularly organized days of commemoration in memory of the victims of the Holocaust (which officially were called "the civilian victims of fascism") were also widely attended. An important role played the national feeling and identity of Jews, which many found in synagogue.

At the same time, Jewish religious communities (especially community of Riga) became a part of the Soviet propaganda. Moreover, under the influence of the Soviet anti-religious politics, believers all the time felt the pressure from the state authorities. Mostly it was control at work and synagogues.

An important part of the communities' activities were also the religious rites. The official surveys practically does not give any insight into the real statistics, however it is known that almost every Jew did the circumcision. The funeral rites also were rather common.

In general, it must be concluded that many Jews during all the reported time strived to preserve the ties with the synagogue notwithstanding the suppression.

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## **YOGA IN LATVIA 1935–1936**

In this research I want investigate the development of yoga in Latvia when it became free from 1918. till 1940. One of the biggest tasks in research will be: realize yoga lectures in concrete time in Latvia, those people who read the lectures and to identifying yoga tradition in line of hinduism in Latvia. After need realize social activity and structure of yoga in Latvia, based on the study of the facts. In my research I will try to find out the ways how people in that time understand what is yoga and how it works.

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## **K.A.TEBECIS'S BIOGRAPHY AND ACTIVITIES IN SUKYO MAHIKARI MOVEMENT**

Karlis Andris Tebecis is Latvian Australian, one of most considerable figure in *Sukyo Mahikari* movement was borne in 1943 in Riga. In 1948, after The Second World War, he and his family was forced to emigrate in Australia, where lives until our days. Tebecis graduate collage and in 1965 obtained a Bachelor of Science (Hons) degree at Adelaide. After he moved to Melbourne, where get a Doctor of Philosophy degree from Monash University for studies at the Physiology Department of transmitter identification in the amphibian and mammalian central nervous systems, using neurophysiological and neuropharmacological techniques.

After Tebecis spent seven years to study, he understood what science couldn't give him answers about transcendental and started his mental searching life period. He trying to get transcendental background in such Eastern countries as India, Nepal, Philippines, Indonesia, until in 1975 he went to Japan, were find *Sukyo Mahikari* NRM and become a member of this group. As a scientist, Tebecis tried to prove *Mahikari* doctrine using biology and physiology empiric methods. He spent almost thirty years in this NRM, most of these as Regional Director of Australia-Oceania and Asia Regions. As a member of *Sukyo Mahikari* movement Karlis Andris Tebecis has published two books: *Mahikari. Thank God for the Answers at Last* and *Is the Future in Our Hands? My Experiences with Sukyo Mahikari*. He also popularized this NRM in Western countries Sweden and Latvia.

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## **CHRISTIAN WITNESS AS EPISTEMOLOGY: A READING IN STANLEY HAUERWAS**

The present paper is an inquiry into the understanding of Christian witness by contemporary North American theologian and ethicist Stanley Hauerwas. His theology centers on the nature and existence of the church to the degree that some researchers (Nicholas Healy in particular) have termed it an "ecclesiocentric theology". The paper will argue that Hauerwas's understanding of Christian witness, however, is primarily epistemological and only secondarily (and by necessity) ecclesiological. In other words, Christian witness is more about the truth being communicated than about the church fulfilling its mission. The discussion will focus on two recent works by Hauerwas, "With the Grain of Universe" (2001) and "Approaching the End" (2013), where he has defined the concept and practice of Christian witness and defended its necessity for the true knowing of God, church and world. First, the paper will examine the goal of Christian witness and suggest that it is understood by Hauerwas as aimed at revealing God to the world and showing the world the truth about itself. Second, it will consider how the witness is carried out. It will be shown that the church's communal lifestyle as the "embodied" truth is the primary form of witness because of the nature of the truth, the nature of the world and the perceived goal of witnessing. In the end, some limitations of Hauerwas's view of Christian witness will be discussed in the light of his epistemology and ecclesiology as well as critiqued from the perspective of a more traditional Christian theology.

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## **"HISTORY" OF THE MALE BODY IN ADVERTISEMENTS OF SANTA MAGAZINE**

**Key words:** *advertisement, mass culture, body, male, printed media*

Understanding of the human body in various historical time periods and cultures has been different. While in the ancient world the body was perceived as opposed to soul, now it has become an important object of interest for historians, sociologists etc. Everyday life has been much more dictated by mass media and industry of entertainment recently, and thus the body has become one of the main elements of human identity. As the french sociologist and cultural theorist, J. Baudrillard wrote in his work *Simulacra and simulation*: "Individuals construct their identity by answering on advertisement and mass media messages."

That's why it's not only interesting, but also valuable to explore how reality, lifestyles, idealised body images and models of behaviour constructed by advertisement, which is mostly obtained from the Western culture, influence Latvians comprehension of how male should look and behave.

By doing content-analysis it is planned to explore how body shape, hairstyle, clothes, visual message etc. has changed during the time and what kind of ideas about male and his body is presented in magazine advertisements.

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## **THE FORGOTTEN, THE OSTRACIZED, THE LOST OR THE EXOTIC? IN SEARCH OF LIEUX DE MÉMOIRE REFERRING BACK TO SOCIALIST PAST IN THE POST-SOVIET CULTURAL SPACES**

The concept of *lieux de mémoire* has been suggested by the French historian Pierre Nora in 1970-s – 1990-s, attributed to any meaningful entity, whether material or non-material, which has become a symbolic element of the memorial heritage of some community by purposeful human performance or the work of time. *Lieux de mémoire* functionates as an array of mnemonic techniques which is set into action when the “real”, “true” memory (Nora refers to it as *milieux de mémoire*) dies out, and a necessity arises for constructing a network structure of referring back to past, thus sustaining the actual identity of a community and laying a solid foundation for developing the existing identity or re-shaping it. In the post-Soviet transition societies *lieux de mémoire* referring back to the Soviet past can be regarded from several points of view, among which the predominating aspects are, first, a tendency to disassociate and forget the past; second, deliberate ostracism; third, a nostalgic yearning for the “lost paradise”; fourth, exoticization the past as a marketing strategy. The research paper gives a broader insight into these aspects and role they play in the transition societies by searching for samples at the post-Soviet cultural spaces, as well as driving parallels among the phenomena of *Ostalgie* in the former East Germany, *Yugonostalgia* in the former Socialist Federal Republic of Yugoslavia, post-Soviet nostalgia in the Russian Federation and, specifically, the post-Soviet nostalgic phenomena in the cultural space of the post-Soviet Latvia.

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## **ABORTION IN LATVIA - NECESSITY OF QUALITATIVE RESEARCH**

The present paper is an inquiry into the understanding of women’s self-narratives of their abortion experiences. The achieved depth of the extended interviews can never be attained by using quantitative methods, e.g. studying the scale of the attitudes. This is one of the main problems of the quantitative investigation, especially concerning to the research of the choice of abortion. The paper will argue that the quantitative and qualitative researches are incomplete if used separately in this sensitive area. Because of the limits of the method deeper investigation of woman’s choice is impossible. For example, using only the quantitative method it may lead to the notion of “unwelcomed pregnancy”. Another disturbing aspect of the abortion research in Latvia is its extreme politicization. There appear to exist an abyss between the assertions like “abortion is a murder” and “abortion is the woman’s right”, which is filled with various interpretations by mass media while the women’s own voices are ignored or misconstrued. The aim of my research is to understand the women and their experiences as well as the meaning they themselves prescribe to it. The political as well as religious rhetoric in Latvia has not changed almost a hundred years, since the beginning of the 20<sup>th</sup> century when the question of abortion became a widely discussed issue in various social forums. Arguments of the both sides still circle around the following themes: “the increase of birth-rate”, “woman’s rights”, “the rights of the embryo”, and “the sacredness of life.” Assuming that the community begins and evolves together with our ability to comprehend the stories of other people, there is an expressed need for future research of this issue in Latvia. A qualitative methodology of the researches would offer deeper understanding to the in-depth evaluation of the issue and consequently work out an arrangement of support and change that could make a difference.

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## **INTEGRATION OF THEORY AND PRACTICE IN THEOLOGICAL EDUCATION - MISSION IMPOSSIBLE?**

As one of the former post-soviet countries Latvia has suffered prolonged periods of estrangement and absence from the ongoing developments in practical/pastoral theology in other places of the world. Nevertheless there has been continuous attempts to transform the theological education in Latvia by integration of learning and praxis, theology and experience. One of such developments that has proved itself over last ten years as successful in sense of its meaning making and transformation provoking potential has been clinical pastoral education. The transformative and integrative potential this method of theological education has had in the understanding and implementation of Christian life in Church and society and in the developments of theological education as such, has served as catalyst in those developments.

The present paper will use a qualitative research project of indepth interview analyses of four students who had succesfully completed clinical pastoral training programme in Latvia as basis for further inquiry in transformative learning in theology. The meaning students attribute to their experience are explored and analysed with the help of interpretative phenomenological analyses or IPA (Jonathan A. Smith, 2009). Paper will conclud with the proposals for universities regarding incorporation of the research findings as well as theory of transformative learning as integrative part of the so-called human sciences education programs (i.e., theology, social work, psychology, nursing, pedagogy). It also will reveal strenghts and weaknesses of the existing higher theological educational model in Latvia as well as evaluate the adequacy and convenience of the chosen qualitative research method in practical theology.

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## **LITERATŪRZINĀTNE UN KOMPARATĪVISTIKA**

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## **LITERARY STUDIES AND COMPARATIVE STUDIES**

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## **TĒLOJUMA ŽANRS LATVIEŠU LITERATŪRĀ**

Mūsdienu literatūras teorijā žanru definēšanas problēma ir ieguvusi perifēra jautājuma nozīmi, jo literatūrzinātne kļūst individuāli subjektīva, bet žanru robežas izplūst. Tomēr terminu precizitāte literatūrzinātnes pētījumos veido pamatkodolu, uz kura balstās novērojumi, analīze un secinājumi, tā nodrošina literatūrzinātnieku savstarpēju saprašanos. Tēlojums ir viens no vismazāk aprakstītajiem literatūras žanriem. Līdzās romānam, stāstam, novelei, literārajai pasakai, esejai, miniatūrai un humoreskai tēlojums tiek definēts kā viens no prozas pamatžanriem, bet Latvijā, neskatoties uz to, ka šim žanram ir pievērsušies daudzi rakstnieki, piemēram, J. Jaunsudrabiņš, A. Caune, A. Vējāns u. c., tas nav piesaistījis literatūras vēsturnieku un kritiķu uzmanību. Tēlojuma žanra izveidi noteica sociokultūras situācija, kad aktuāla kļuva literatūras apgaismības funkcija. 19. gadsimta beigās – 20. gadsimta sākumā Latvijā joprojām bija nozīmīgs 19. gadsimta 60.–80. gados sabiedrības aktualizētais pieprasījums pēc informatīva rakstura darbiem. Periodikā tika publicētas apceres par nozīmīgiem sabiedrības attīstības procesiem; šīs apceres vienoja gan publicistikas, gan daiļliteratūras stila iezīmes. Tā latviešu literatūrā radās tēlojums. Tomēr izpratne par tēlojuma žanru nav viennozīmīga. Latviešu literatūras teorijā un kritikā gan 20., gan 21. gadsimtā bieži vien netiek šķirtas dažādas *tēlojuma*

nozīmes – tas ir gan noteikts apraksta veids, gan īsprozas žanrs. Situāciju sarežģī arī tas, ka tēlojuma žanrs latviešu literatūrzinātnē ir maz analizēts un aprakstīts. Tādēļ nereti rodas domstarpības par konkrētu prozas darbu žanra noteikšanu. Ziņojumā tiek sniegta tēlojuma žanra definīcija, ņemot vērā ārzemju teorētiku sniegumu, un apskatīti būtiskākie tēlojumi latviešu literatūras vēsturē, pievēršot uzmanību strīdīgajiem gadījumiem.

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## **DIALOGA FORMAS ESEJAS: ARGUMENTĀCIJAS ASPEKTS**

Mūsdienu informācijas laikmets ir iniciējis aizvien dziļāku argumentācijas fenomena izpēti, kas spilgti izpaužas žurnālistikas un politoloģijas jomā. Vārdisks izteikums mijiedarbībā ar neverbālu komunikāciju tiešā un netiešā veidā ietekmē mērķauditorijas domāšanas un uzskatu sistēmas veidošanos. Ievērojot argumentācijas socializācijas funkciju, informanta viedokļa izteiksmes un personīgās domas ietekmes uz informācijas saņēmēju procesa īpatnības atklājas argumentācijas mākslas daudzveidīgajās izpausmes formās (runā, lekcijā, ziņojumā, intervijā, strīdā, polemikā, diskusijā, dialogā utt.). Argumentācijas pārvaldes funkcijas kontekstā analizējama gan viedokļu tuvināšanās un domstarpību mazināšanās iespēja, gan manipulācijas izmantojuma gadījumā konflikta starp atšķirīgajām argumentācijas pusēm pastiprināšanās risks.

Spēja argumentēt un pārliecināties paust savu viedokli raksturīga vēl antikajiem filozofiem (Sokrāts, Platons, Seneka u. c.), taču arī dažādu nacionālo literatūru māksliniecišķajos tekstos varoņi piedalās aktīvā savu uzskatu un viedokļu apmaiņā, debatē par dažādām sabiedrībā svarīgām tēmām un pastāvošām vērtībām. Šāda veida diskusijas nereti veido dialoga formas filozofiskās esejas pamatu. Argumentu sniedzējs tajā izsaka un argumentēti aizstāv savu viedokli, polemizē ar argumentu saņēmēju, dzēšot vienvirziena rakstura shēmu un pasīvo komunikācijas procesa dalībnieku transformējot aktīvajā.

Lai gan esēja literatūras teorijā ir mazapzināts starpžanru naratīvs ar mainīgām kontūrām, tajā vērojama filozofijas, vēstures, retorikas, kritikas, biogrāfijas, autobiogrāfijas, publicistikas, psiholoģijas u. c. komponentu klātbūtne. Esejai pretstatā kanonizētiem literārajiem žanriem piemīt zināma „mīnuss-forma” ar domu alineāru virzību, antilogiku un neviendabīgu saturu. Līdz ar to autoram paveras plašāka iespēja paust savu uzskatu sistēmu, izvairoties no strīda un polemikas, kas nereti argumentācijas puses tuvina konfliktam, un virzīties uz diskusiju un dialogu kā samierināšanās vai tolerances formu.

Referāts veltīts argumentācijas principu analīzei dažādu laikmetu rakstnieku dialoga esejās, kas ļauj atklāt pārliecināšanas mākslas specifiku un līdzekļus literārajā diskursā sastatāmajā aspektā.

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## **EL MODERNISMO LITERARIO EN HISPANOAMÉRICA**

En el idioma español se denomina Modernismo a un movimiento literario que abarcó todas las manifestaciones artísticas entre 1890 y 1910, cuyo máximo exponente fue el nicaragüense Rubén Darío. El Modernismo literario dio sus mejores frutos en la poesía que se caracterizó por un gran refinamiento, culturalismo cosmopolita, etc.

Este movimiento sentó las bases de la poesía contemporánea y fueron los escritores modernistas los que por primera vez giraron sus ojos hacia el continente americano sin depender totalmente de Europa.

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## **FOREST, TREES AND SILENCE IN INGA ABELE'S PLAYS**

Inga Abele is one of the rare women-writers that proved themselves in poetry, prose and especially in plays being quite young. The plays by the Latvian writer "Dark Deer" („Tumšie brieži"), "Iron Grass" („Dzelzszāle"), "Jasmine" („Jasmīns") have been put on the stage in many European countries.

In I. Abele's play "Jasmine" the significance of the family tree that is a keeper of family traditions is represented very vividly. Jasmine, being the only support of the impoverished family, does not want lose the distraught through her husband fault house, her grandmother and even her husband, love to whom is in her habit.

The central poetic symbol of the play is the jasmine that is growing nearby the house and the main character named Jasmine as well. In the opinion of the main character, the jasmine is a family tree, it is a certain dialogue of the generations, and it is a historical memory about the family. It, similar to any ordinary tree, lives and can bring luxuriant blossom of its descendants, but it can also wither because of indifference to its roots. If the tree is dying, the main character is dying, too. This play is about the death of the jasmine behind the window (the loss of the house) and Jasmine (the destiny of a woman to sacrifice for the sake of the others).

In the play "Dark Deer" the writer shows a man in a critical situation, when he is separated from the nature. The daughter of the main character, Ria, having found herself being involved into different conflicts, goes to the forest as she sees it as a shelter.

In all plays by I. Abele presents the same family pattern, i.e. a full classical family (mother – step-mother, father and child), but it lacks harmony, love and trust. The house is seen as a cold prison, its inhabitants feeling lonely and isolated are searching for a shelter in the nature, forest, silence.

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## **THE RECEPTION OF SIBERIA IN P. THEROUX'S AND I. ABELE'S TRAVELOGUES**

The image of Siberia with its wide and exotic space, controversial history, specific culture and way of life has always attracted both travellers and writers. Starting from the 17<sup>th</sup> century the chronotope of Siberia was mainly interpreted by Russian writers and travellers. The image of Siberia gains particular popularity by the 19<sup>th</sup> century, when a significant number of Russian literary works, both fictional and non-fictional, which are dedicated to the space of Siberia, its landscape, culture and people, appear. The Siberian space acquires various interpretations. For the 18<sup>th</sup> century writers and travellers it was an alien land, hardly associated with Russia. Some writers interpreted the chronotopic image of Siberia as a country of coldness (winter) and night (moon). Although for the majority the image of Siberia associated with the prison and the place of exile, many emphasized its unusual nature and attractive landscapes. Odic poetry stressed its beauty and richness; Siberia was also frequently represented as a region of wide lands with a great deal of natural resources.

The aim of the present article is to reveal, whether the stereotypes concerning the Siberian space, people and culture appear and remain topical in the works of contemporary writers. Paul Theroux, an American traveller and writer, while undertaking his four-month journey through Europe, Asia and the Middle East, finishes it with Siberia going back home through Khabarovsk to Moscow, London, and finally to America. He devotes the last chapter of his travelogue *The Great Railway Bazaar* (1975) to this quite exotic for him space. The Latvian travelogue writer Inga Abele describes Siberia in her travelogue diary *Austrumos no saules un ziemeļos no zemes* (2005), basing on her 3 weeks trip and living in a village Bobrovka, Omsk region, a home of around 150 Latvian immigrants. Both the writers represent their own vision of Siberia, which is very challenging to interpret and compare.



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## **PADOMJU KONCEPTI MŪSDIENU LATVIEŠU LITERATŪRĀ: R. MEŽAVILKA „DZIMUŠI LATVIJAI”, P.BANKOVSKIS „SEKRETI. PIEROBEŽAS ROMANCE”**

Referātā tiek aplūkoti un analizēti padomju koncepti latviešu rakstnieku Rūtas Mežavilkas romānā „Dzimuši Latvijai” un Paula Bankovska romānā „Sekreti. Pierobežas romance”. Postpadomju Latvijas kultūrtelpā aizvien vairāk tiek aktualizēti PSRS režīma vēsturiskie, sociālie un politiskie notikumi, kas dažādos veidos projicējas arī mūsdienu latviešu literatūras pārstāvju darbos. Padomju konceptu atspoguļojums liecina par autora personīgo pieredzi, atmiņām par laikmetu, kā arī attieksmi pret to, vienlaikus demonstrējot balansu starp nostalgiju un ironiju. Ar komparatīvās analīzes palīdzību tiek izkristalizēta divu dažāda vecuma pretējā dzimuma pārstāvju interpretācija un skatījums uz Padomju laiku. Daļa autoru to raksturo tieši – izmantojot kultūrkodus, reālu notikumu atstāstus, atklāj šķietami personīgo pieredzi, taču daži šo periodu raksturo, izmantojot zemtekstus, tādējādi mulsinot un inspirējot lasītāju bagātināt savas zināšanas par PSRS laiku. Jo īpaši svarīgi tas ir mūsdienu literatūras galvenajai mērķauditorijai – jauniešiem, kas dzimuši pēc Latvijas Republikas neatkarības atjaunošanas bez personīgās pieredzes tā laika politiskajā režīmā.

Ar konceptu analīzes metodoloģisko pieeju un strukturāli semiotisko metodi tiek apskatīti un raksturoti zīmīgākie padomju koncepti, kas dažādos veidos atspoguļojas R. Mežavilkas un P. Bankovska romānos. Caur postpadomju literatūras kultūrkodiem, kas plašāk definējas konceptos, mūsdienu receptients nolasa un izprot Padomju laika kultūras un sadzīves reālijas, precīzāk uztver procesus, notikumus un situācijas, kas šai laikā ir notikušas. P. Bankovska un R. Mežavilkas romāni ir atšķirīgi veidoti, ietver dažādu vēstījumu, taču kopīgo var rast, izkristalizējot padomju konceptus un dekodējot to kultūrinformāciju, ko autori atkarībā no situācijas – tieši vai netieši vēlas pavēstīt saviem lasītājiem.

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## **ФЕРНАНДО АРРАБАЛЬ У ИСТОКОВ «ПАНИЧЕСКОГО» ДВИЖЕНИЯ**

Движение «Паник» (le Panique), основанное Ф.Аррабалем, А.Ходоровским и Р.Топором в 1962 году, по утверждениям самих авторов было создано как анти-движение против сюрреализма, превращающегося в буржуазный мейнстрим. Этимология слова восходит к Пану, богу любви, юмора и испуга. «Панические» театральные представления задумывались как шокирующие и высвобождающие деструктивную энергию с целью поиска мира и красоты. В сентябре 1962 года Аррабаль публикует первые пять основополагающих «панических» рассказов в журнале Андре Бретона «*La Brèche*» а уже в 1973 выходит его книга «*Le panique*». Перу Аррабаля также принадлежат три «панических» манифеста, последний из которых выходит в 2007 году и адресован читателям третьего тысячелетия.

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## **МЕНЮ РУССКОГО ПОМЕЩИКА В РОМАНЕ И.А. ГОНЧАРОВА «ОБЛОМОВ»**

Мотив еды – один из основных в романе Гончарова. Главной жизненной заботой в «Обломовке» было хорошо поесть, и после этого так же хорошо поспать. Об обеде совещались целым домом, решали какое блюдо надо приготовить, и каждый старался «продвинуть» своё блюдо. После обеда все засыпали, кто где. Эти заботы привил «обломовцам» сам Илья Ильич Обломов.

Еда для «обломовцев» несёт не только физическое, но и моральное удовлетворение. Она является основным смыслом жизни героев романа.

«Еда», во-первых, создает соответствующий исторический фон для функционирования героев; во-вторых, с помощью этих единиц показывается эволюция главного героя – Обломова – в материальной и в духовной сферах.

С помощью описания застольных бесед автор раскрывает скрытность характеров. Отношение к еде становится своеобразным показателем отношения к жизни, своего рода жизненной философией обломовцев». «Обломовцы» не просто едят и пьют: их аппетит незаметно превращается в истинное гурманство, приготовление пищи – в виртуозное мастерство, а кухня – в своего рода храм. Однако несмотря на некоторое гурманство, гастрономические пристрастия обитателей обломовского мира просты и естественны, близки миру природы. Именно на уровне мотива «еды» проявляется существо обломовского мира – радость жизни, наслаждение ею. Тем самым мотив «еды» и его реализация в романе переводят действие романа с бытового уровня на бытийный.

В связи с этим, на основе прочитанного романа я решил составить меню обедов И. Обломова.

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## **SPORTS UN IZGLĪTĪBA**

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## **SPORT AND EDUCATION**

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## **COMPLEX OF PHYSICAL EXERCISES FOR YOUTH INDEPENDENT ACTIVITY**

One of the components of long sustainable development of sports in education is a hierarchy of motives in the structure of students' motivation. Students often refuse to sport if the leading ranking places in the structure of sports motivation are occupied by motifs associated with the avoidance of failure. Structure of sport motivation mediates social, cultural and economic welfare of the individual. It is necessary to examine the structure of sport motivation to provoke youths to physical activity and physical lifestyle.

Using the snowball technique participants, who were offered an independent program of sport, were selected. Classes were guided remotely within six months. Consultations were held at least twice a week online, 1 time per month – meeting in the gym. Recommendations were made considering training time, sportswear, hygiene, of proper breathing during exercise, physiological capabilities and the level of self-study and the amount of exercise.

Course Topics were as follows: exercises of general physical preparation were performed, as well as a complex of breathing exercises and exercises for muscles stretching. Before the group lessons not only the hierarchy of motives in the structure of motivation was studied, but also a control test was carried out, which determined the level of physical training. After the completion of the training set of exercises is envisaged to re-test physical training to determine it, as well as get an expert evaluation of the appropriateness of carrying out a complex and independent physical activity.

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## **DEVELOPMENT OF POWER ENDURANCE IN THE SHOULDER GIRDLE OF YOUNG PEOPLE AT THE AGE OF 16-17 YEARS DURING OUT-OF-SCHOOL ACTIVITIES**

**Keywords:** *power, power endurance, phosphocreatine, muscle innervations.*

Power endurance is the muscle ability to cause maximum effort within a longer time period without considerable muscle contraction power loss. Power endurance expresses only in case of high physical loads, when muscles are contracted with large power. The study represents the cognitions obtained as a result of analysis of scientific literature regarding methods of power endurance development, as well as exercise complexes suggested by the author to train the shoulder girdle muscles for boys at the age of 16–17 years in an educational institution during out-of-school activities. The main factors influencing the power endurance are reserves of phosphocreatine in muscles and its regeneration speed, intermuscular coordination, and muscle innervations. To train the power endurance, it is required to perform exercises with such a number of repetitions, which means a number between power work and endurance work. In the further study course, the influence of such exercises like lying support push-ups, pull-ups and push-ups on the bars on the power endurance will be checked. The efficiency of this method's use for training of power endurance in Latvia has been studied less.

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## **ENDURANCE DEVELOPMENT OF 13-15 YEAR-OLD BOYS IN FOOTBALL**

**Keywords:** *Endurance, 13-15 year old boys, football.*

Endurance is the human ability to perform sustained work without compromising efficiency. Endurance is mainly determined by CNS activity, circulatory and respiratory systems. Endurance for football players is the ability to do the maximum work capacity, while maintaining the effectiveness of the technical and tactical activities during the game. Endurance is divided into general and specific endurance. To reach the maximum level of endurance for football players is very difficult, because of the fact that during the training sessions, often different mechanisms of energy are reinforced. After occurrence of fatigue a player is more likely to make mistakes, and lose an ability to concentrate and make the right decisions. Therefore, to increase the time of the best possible performance, while maintaining a high quality of work, it is necessary to develop aerobic abilities, or endurance. Endurance development is recommended to start from 13 to 14 years. In case of well-balanced program, the new athlete can develop their high-quality aerobic abilities.

**The purpose of research:** is to investigate opportunities for endurance development for 13-15 year-old boys in football.

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## **FIZISKU ĪPAŠĪBU ATTĪSTĪŠANA**

Daudzi cilvēki nodarbojas ar fiziskām aktivitātēm, lai padarītu savu organismu par veselīgu un izturīgu.

Profesionāli sportisti nodarbojas ar sportu, lai paaugstinātu savu meistarību un kļūtu par stiprākiem, ātrākiem un izturīgākiem. Tas ir piemērots arī tādām sporta veidam kā futbols. Ļoti bieži, izšķirošajos spēļu momentos, īpaši spēļu beigās, rezultātu dod ne visai augstāka meistarība un taktiskas zināšanas, bet fiziskā sagatavotība.

Zinot par to, visi treneri centās padarīt savus audzēkņus stiprākus nekā citu komandu spēlētāji, jo fiziskās spējas ir viens no galvenākajiem, ja ne galvenākais, moments, lai gūtu rezultātu. Tāpēc visu starpsezonu periodu, kas var ilgst līdz pat 2-3 mēnešiem, treneri velta ļoti daudz laika sevišķi fizisku kondīciju attīstībai.

Sports vienmēr attīstās un iet uz priekšu. Katru gadu radās arvien jaunākas nodarbību metodikas un attīstīšanas programmas. Īpaši nopietni ar to strādā Eiropas speciālisti no Itālijas, Vācijas un Holandes. Treneriem ir iespēja izpētīt katru un izvēlēties pēc viņu uzskata labāku.

Futbols ir sporta veids, kur savienojas gan ātruma īpašības, gan izturība, gan spēks, gan reakcija un domāšanas ātrums. Tāpēc nereti treneri ņem arī sagatavošanas paņēmienus no citiem sporta veidiem, piemēram, no vieglatlētikas vai boksa. Es uzskatu, ka bērni attīstās tikai ar kustību palīdzību un gribu piedāvāt savu 10-nedēļu programmu, kurā tiek savienoti vingrinājumi no dažiem sporta veidiem. Nodarbības ir īsas un sakomponētas tā, lai bērni vienmēr būtu kustībā. Mana programma attīsta gan ātruma īpašības, gan izturību, gan veiklību un reakciju, bet es mēģināšu to paveikt maksimāli nodarbojoties ar bumbu, nevis tikai skrienot vai izpildot vingrinājumus trenāžieru zalē.

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## **FUTSAL AS A SYSTEM OF SPORTS EDUCATION: HISTORY OF DEVELOPMENT, PROBLEMS AND PROSPECTS**

*Key words: Futsal, sports education, history of sport.*

At present time Futsal is one of the most rapidly developing kinds of sport. Its popularity increases from year to year all over the world due to its staginess and high emotionality. Futsal can also be regarded as one of the systems of sports education, which is aimed at a balanced development of personality – practicing this kind of sport allows to develop not only general level of physical development and physical activity, but also develops endurance and stamina and forms the sportsman's character.

The present article looks at how Futsal originated and its development worldwide and in Latvia. The following research methods were used: theoretical analysis and summarising – defining features of formation of Futsal as one of the systems of sports education, and determining the main characteristics of this system.

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## **PECULIARITIES OF MANIFESTATION OF PROFESSIONAL STRESS AMONG REFEREES OF CHILDREN'S ICE HOCKEY**

Sports referees have a challenging job, which is affected by many aspects of the game – speed and complexity of decision-making, importance of their actions, number of people directly and indirectly involved in the game, as well as very often negatively minded spectators at a sports event. Sports referees have to implement simultaneously several tasks, including immediate analysis and evaluation of the situation in game, game control and paying attention to many-sided aspects of the game, among them, maintaining order and settling disputes. Moreover, manifestation of sports referees' subjective attitude in evaluating actions and decision-making creates the greater probability for making mistakes. All this makes the profession of ice hockey referee very complex, by exposing sports referees to the constant influence of stress, which is intensified by the incoming criticism about the mistakes made during the game. Thus, there exists the need to study the possibilities to minimise and overcome stress influence on referees, by emphasising the peculiarities of the work of Latvian referees of children's ice hockey.

The research question was defined: do the strategies for overcoming stress situations chosen by referees of children's ice hockey contribute to the development of resistance to stress? In the research test of determining referees' resistance to stress and test of determining complex manifestations of stress were used.

As a result, the stressogenic factors of Latvian referees of children's ice hockey were determined, as well as the connection between choosing behaviour strategies and resistance indicators in the stress situation was established. It is possible to state that the personality characteristics of Latvian referees of children's ice hockey defines the choice of individual strategies for overcoming professional stress and lack of formation of stress resistance.

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## **TEACHING "THE WINDMILL" THROW IN FREESTYLE WRESTLING TRAINING PROCESS TO 10-12 YEAR OLD KIDS**

*Key words: freestyle wrestling, "The windmill throw", The fireman's carry, 10-12 year old kids.*

The study of fundamental techniques and tactics is one of the primary goals of training process in freestyle wrestling. The training process is based on methodological principles and takes into consideration individual training methods, which are reflecting the techniques and tactics of wrestling. Every year the demand for perfection of the training methods is rising. The reason for that is quite logical – freestyle wrestling is developing in our country and around the world. To achieve the best competitive results in freestyle wrestling coaches have to systematically improve the technique and core skills of young wrestlers, taking into account their capabilities and common characteristics of their respective age group. They have to be dedicated in teaching fundamentals of the craft, including the throws and takedowns, in particular – the Windmill throws (The fireman's carry).

The goal of this thesis is to study the possibilities of teaching "the windmill" throw to 10-12 year old kids in freestyle wrestling training process.

### **The goals of this study:**

To study and to analyze the scientific literature that describes age characteristics of 10-12 year old kids. To study the literary sources to find information on the methodology of teaching "the windmill" throw. To develop and to test a set of exercises that will be used in training wrestlers in the process of learning "The windmill throw". To do a research on the possibilities of teaching "The windmill throw" to 10-12 year old kids.

**Methods used in performing the study:**

Analyzing the literary sources  
Conducting surveys  
Studying the performance during exercises to monitor the progress  
Making observations during the training process

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## **USING MUSICAL BACKGROUND DURING ROWING TRAINING TO DEVELOP STAMINA OF TEENAGERS 12 TO 14 YEARS OF AGE**

**Key words:** *rowing, stamina, music, teenagers 12 to 14 years of age.*

Many people who are not very familiar with the sport of rowing associate it with water and open-air activities; however, a large part of the training process happens indoors and involves monotonous exercise with the aim to improve stamina. Conveyances of stamina are determined by several factors including genetic features, efficiency of technical skills as well as psychological well-being that could be directly and positively influenced by the usage of music. Adolescence is a period when many people decide to leave sports that is why the trainers of this age group need to be able to ensure the necessary interest in a training group, complementing the training with different activities and methods suitable for teenagers. The choice of the particular topic was determined by the above mentioned factors about the importance of adolescence and the specifics of rowing as well as the personal interest and sportive experience of the author.

Aim of the research: to explore the efficiency of stamina development methodology for teenagers 12 to 14 years of age.

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## **TESTING OF PHYSICAL DEVELOPMENT AND PHYSICAL PREPAREDNESS OF CHILDREN AND ADOLESCENTS**

**Keywords:** *physical development, physical preparedness, children and adolescents, testing.*

According to scientists from different countries and from different areas of science, if in the near future effective and large-scale steps in the field of health-enhancing physical activity will not be taken, the tendency of health and physical development of the younger generation will decline. Moreover, it will entail a subsequent reduction in the level of health in all age groups and further impact on the quality of human resources and the biological basis of future generations. The results of comprehensive studies allowing to monitor the dynamics of physical development and physical preparedness of different age groups can be used as an effective tool for the implementation for preservation, strengthening of health and disease prevention. The basis of this advanced technology is testing the physical condition.

**The purpose of research** – to examine different methods of testing physical development and physical preparedness of children and adolescents in different countries.

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# AKTUĀLĀS SOCIĀLĀS PSIHOLOĢIJAS PROBLĒMAS

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## CURRENT ISSUES OF SOCIAL PSYCHOLOGY

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### LATVIJAS JAUNIEŠU PILSONISKĀ AKTIVITĀTE SAISTĪBĀ AR PERSONĪBAS IEZĪMĒM

Daudzi pētījumi ir koncentrēti uz dažādiem sociāliem apstākļiem un mehānismiem, kas ietekmē pilsonisko aktivitāti, bet cik nozīmīga loma aktīva pilsoniskuma veidošanā ir personības iezīmēm. Kuras no personības iezīmēm var uzskatīt par resursiem, kas veicina sociālo uzvedību, ko var raksturot kā pilsonisko aktivitāti un kuras personības iezīmes kavē nepieciešamo pieredzi veidojot pilsonisko aktivitāti. Pētījuma mērķis ir noteikt Latvijas jauniešu gatavību iesaistīties pilsoniskās aktivitātēs saistībā ar personības iezīmēm, pamatojoties uz pilsoniskām attieksmēm. Pētījumā piedalījās 360 jaunieši, vecumā no 14–18 gadiem. Pētījuma metodes – Active Citizens: 34-items Citizenship questionnaire (Herbst, 2005) (Theiss-Morse, 1993; Lewicka, 2004, 2005)., BIG 5 model: NEO FFI Inventory (P. T. Costa, R. R. McCrae). Pētījuma gaitā ir prognozēts noteikt kādas personības iezīmes ir pilsoniskās aktivitātes pamatā.

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### ANTISOCIĀLĀS ATTIEKSMES PRET KRIMINĀLO VARDARBĪBU IZPĒTE AR IMPLICĪTO ASOCIĀCIJU TESTU UN PAŠNOVĒRTĒJUMA METODĒM

Kriminālās vardarbības problēmas risināšana ir viens no pamatnosacījumiem veselās un laimīgas sabiedrības veidošanai un eksistencei. Antisociālās attieksmes ir galvenais noziedzīgās uzvedības prognozēšanas faktors, tādēļ ir nepieciešams izstrādāt atbilstošus instrumentus šo attieksmju izpētei. Pasaulē pavisam nedaudz pētījumu izmanto implicītos mērījumus antisociālo attieksmju pētniecībai un pēta eksplīcīto un implicīto līmeņu atbilstību.

*Pētījuma mērķis* ir attieksmes pret vardarbību valences izpēte ar implicīto asociāciju testu un pašnovērtējuma procedūrām

*Pētījuma izlase* (N=103 vīrieši) sastāvēja no divām grupām: apcietinātas personas (N = 53) un iepriekš netiesāti indivīdi (N = 50). Dalība pētījumā bija brīvprātīga un anonīma.

*Implicītie mērījumi:* īpaši konstruēta Modificētā Implicītā Asociāciju Testa (IAT) versija – Kriminālās vardarbības IAT. Modificētā IAT metode tika izstrādāta, pamatojoties uz klasisko IAT dizainu. Modificētā IAT versija tika izveidota uz sertificētas datorprogrammas E-Prime 2®.

*Pašnovērtējuma procedūras:* 1. Lingvistiskās adaptācija „Kriminālās attieksmes pret vardarbību skalai” „Criminal Attitudes to Violence Scale” (CAVs).

2. Trīs neatkarīgas skala no Antisociālo attieksmju diagnostikas metodes (Vardarbības pret sevi skala, Emocionālo reakciju kontroles skala un agresijas un vardarbības skala).

*Rezultāti* apstiprināja statistiski nozīmīgas atšķirības attieksmē pret kriminālo vardarbību starp grupām „tiesātie” un „netiesātie” gan implicītā, gan eksplīcītā līmenī. Tika atklātas gan pozitīva, gan negatīva attieksme pret vardarbību.

*Secinājumi:* Pētījumā iegūtos rezultātus var izmantot psihoterapeiti un sociālie darbinieki praktiskā darbā ar ieslodzītajiem. Implicito mērījumu instrumentus var izmantot esošo un bijušo noziedznieku sociālās rehabilitācijas programmu iedarbības novērtēšanai, piemēram, atklājot attieksmi pret vardarbības esamību un tās maiņu pirms un pēc sociālās rehabilitācijas programmas vai psihoterapijas kursa.

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## THE PROBLEM OF THE DEFINITION OF THE CUSTOMER LOYALTY CONSTRUCT

**Keywords:** attitudes, cognitive, emotional, implicit loyalty

Studies have shown that nowadays not determined universal consumer loyalty and models definition. Consumer loyalty one-dimensional and multi-dimensional constructs studies are mostly explicit methods. Implicit methods are mainly used in consumer one-dimensional construct exploration, while the multi-dimensional measurements practically do not occur.

The aim of this study is to analyze a variety of consumer loyalty models that describe the concept of consumer loyalty.

The analysis shows that consumer loyalty is studied as a one-dimensional construct (emotional loyalty); two-dimensional (cognitive and emotional loyalty); three-dimensional (cognitive, emotional and behavioral loyalty); four-dimensional (cognitive, emotional, conative and action loyalty); multi-dimensional (attitudinal attitudes (emotional, cognitive and implicit), conative and action loyalty).

Theoretical analysis shows that especially perspective is the study of implicit and explicit aspects of customer loyalty.

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## THE USE OF COMPUTER IN A CONTEMPORARY SCHOOL

**Key words:** computer, computer programs, computer games, teenagers, children, parents.

This research focuses on the issue of a more extensive use of technologies by the society. There are loads of information that each of us need to acquire for certain purposes and in certain life conditions. The use of IT technologies creates a number of problems the consequences of which we will be able to understand much later. Particularly, this is related to children, teenagers, youth who are always able to evaluate the advantages and disadvantages of technologies. This is essential to evaluate a reality that computers are essential part in the life of youth not only with a purpose to acquire new information, but also as means of spending free time. One of the leading sociologists in the world E. Giddens, by placing an emphases on the mean of mass communication, has told: "The means of mass communications is one of the essential components of a psychosocial life and occupy a significant place in developing one's value system." This study analyses the concepts of many authors and their theories about the use of technologies (Anderson & Bushman, 2001; Rubene Z., Krūmiņa A., Vanaga I. 2008; Schorb,2005; Plaude, 2003; Veinberga, 2005; u.c.).

This study offers the analyses of the results gained via questionnaires to evaluate the effectiveness of use of computer programs to evaluate the efficiency of use of these programs in the educational process. By the use of Kimberli Jang questionnaire, the authors have studied the usefulness of use of technologies. Particular attention is paid to the intervention strategies used by the parents to control the usefulness of use of technologies by their children.



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## **ОСОБЕННОСТИ КОНСТРУИРОВАНИЯ И РЕПРЕЗЕНТАЦИИ ЖЕНСТВЕННОСТИ В СУБКУЛЬТУРЕ БЕЗДОМНЫХ ЛИТВЫ**

**Ключевые слова:** бездомная женщина, женственность, идентичность.

Исследования в Литве и других странах показывают, что бездомность имеет «мужское лицо», т.е. большую часть бездомных составляют мужчины. Женщины, как правило, составляют лишь одну пятую или одну четвертую часть этой маргинальной группы. Каким же является положение этих женщин в мужском окружении? Какое воздействие на их женственность имеет субкультура, которой они принадлежат? Наше исследование показало, что взаимодействие пола с другими социальными, экономическими, культурными условиями формирует идентичность бездомных женщин, которая характеризуется традиционным и нетрадиционным восприятием женственности.

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## **SUPERSTITIONS: MEN & WOMEN WHAT DO THEY BELIEVE IN?**

The name of the present study is *Superstitions: men & women what do they believe in?* Superstitious beliefs and superstitions as the psychological phenomenon has always been a part of individual's life regardless the century he lives in, there is always something unexplained and unknown when it's about the things that matters for person's life. Despite of scientific discoveries and pragmatic attempts to explain everything by empirical approach, which is based on representative methods, samples and statistically confirmed hypotheses superstitions still survive in people's mind sometimes as the conscious part, sometimes as the unconscious part of human's psyche. Taking into consideration, the fact that superstitious beliefs and superstitions are common when it's about observing people in their everyday life and the situations when they need to deal with black cats, broken mirrors, ladders and whatever else in the luck race, and so rare when it's about scientific researches, empirical evidences and representative findings. Therefore, the *aim* of the present study is to research *MEN & WOMEN SUPERSTITIOUS BELIEFS*. According to the aim of the study following *research questions* were asked: *WHAT ARE THE MOST COMMON SUPERSTITIONS THAT PEOPLE BELIEVE IN? ARE THERE ANY GENDER DIFFERENCES IN SUPERSTITIOUS BELIEFS?* In order to answer research questions qualitative-quantitative methodology was used.

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## **ORGANIZATIONAL CULTURE VALUES ANALYSIS OF PUBLIC AND PRIVATE INSTITUTIONS**

**Keywords:** organizational culture, corporate values, personal values.

Besides technological progress, internal changes are made in more and more enterprises. To achieve the best result of planned changes more effectively, it is possible to use a really unique resource of the company – organizational culture. Successful company develops using corporate values, contributing cohesion of members of the group, creating the sense of belonging to organization, loyalty and common future vision. In order to understand, how the enterprise can realize internal changes with changing and improving organizational culture, values of personal and organizational culture are analyzed in proposed article.

The article includes analysis of the insights on organizational culture research offered by various scholars; it shows main functions and describes characteristics of organizational culture elements (Dubkevics L. 2009; Barrett R. 2006; Renge V. 2008; Praude V., Belcikovs J. 2001; etc.).

There is organizational culture assessment methods of different scientists (R.Barrett, K.Cameron and R.Quinn) also analysed here. Detailed research of organizational culture in this study is based on The Barrett Seven Levels of Consciousness Model by Richard Barrett (USA, 2006), which considers, that successful organization is based on values reflecting the main meaning of company`s existence. Every individual perceives values as a priority, which makes sense and gives motivation for existence, including working life. Analyses of personal values gives us opportunity to compare employees` personal values to organization`s common results. The identification of personal values and organizational culture values gives employees the possibility to understand the main personal values and compare them to desirable values for organization, which they would like to see in work of the organization, in this way they are able to recognize connection between personal and corporate values and see, how interaction between them can influence the growth of the organization.

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## **SABIEDRISKO ATTIECĪBU LOMA REĢIONĀ JEB VIETĒJO UZŅĒMUMU TĒLA VEIDOŠANA**

Sabiedriskās attiecības šobrīd ir viena no jomām, kas piedalās reputācijas veidošanā. Tās ir nozīmīgs komunikācijas rīks, kas veido un izplata informāciju.

Sabiedrisko attiecību speciālisti darbojas dažādos organizāciju līmeņos – gan valdības, gan privātajā sfērā, sākot no nelieliem uzņēmumiem līdz pat brīvprātīgo darbam. Tas nozīmē, ka šīs nozares speciālistiem ir vidutēja loma starp organizāciju un sabiedrību. Dažkārt sabiedrisko attiecību ieguldījums kļūst aktuāls tieši sociālo izmaiņu ietekmē, līdz ar to tiek izvērstā diskursīvā prakse, kas nereti komunikatīvajos procesos nemaz nav pamanāma.

Sākotnēji sabiedrisko attiecību joma tika saistīta ar menedžmenta darbību, korporatīvo un riska komunikāciju, sociālo atbildību, taču šobrīd tās izpausmes ir attīstījušās un mainījušās. Teorētiskajā literatūrā sabiedrisko attiecību speciālisti tiek dēvēti par kultūras starpniekiem (Hodges, 2005, 2006; L'Etang, 2009), jo mūsdienu publiskā telpa ir postmodernisma ietekmē – pastāv dažādi komunikācijas veidi un kanāli, kā arī multikulturālisma un globalizācijas iespaids, tādēļ sabiedrisko attiecību nozare tiek paplašināta izmantotās prakses un pētniecības pieeju aspektā.

Latvijā darbojas daudz sabiedrisko attiecību aģentūru, kas savus pakalpojumus realizē galvenokārt galvaspilsētā. Šajā pētījumā tiek noskaidrots, kāda situācija ir reģionā, vai vietējie uzņēmumi domā par publicitāti un komunikāciju publiskajā telpā un cik šī nozare ir nozīmīga reģionā kopumā. Vai tā ir tikai centra privilēģija, un kā sabiedriskās attiecības var attīstīties reģionā?

Pētījumā apkopoti Latgales reģiona vietējo uzņēmēju viedokļi par sabiedrisko attiecību nozīmi uzņēmumā un to aktivitāšu veidiem. Viens no redzamākajiem vietējo uzņēmumu publicitātes pasākumiem ir raksti lokālajos laikrakstos, ko galvenokārt iniciē paši žurnālisti, retāk tiek izmantoti reklāmpasūtījumi, šobrīd uzņēmumu tēla veidošanā iesaistās vietējo pašvaldību sabiedrisko attiecību speciālisti.

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## LATVIJĀ DZĪVOJOŠO PIEAUGUŠO PRIEKŠSTATI PAR NĀKOTNES PERSPEKTĪVU

*Atslēgvārdi: nākotnes perspektīva, priekšstati par nākotni, Latvijas iedzīvotāji.*

Raksta mērķis empīriski izziņāt Latvijā dzīvojošo pieaugušo priekšstatus par nākotnes perspektīvu un pamatojoties uz empīriskiem datiem izstrādāt jaunu mērījuma metodi. Pētījumā piedalījās 82 respondenti no dažādiem Latvijas reģioniem no tiem 64 sievietes vecuma no 21 līdz 61 gadiem (M=39 g.v.) un 18 vīrieši vecuma no 19 līdz 63 gadiem (M=40 g.v.). Nākotnes perspektīvas priekšstatu izziņāšanai respondentiem tika piedāvāts atbildēt uz sekojošiem jautājumiem: „Kas, jūsuprāt, ir nākotnes perspektīva?” un „Ko tieši jums, nozīme nākotnes perspektīva?”. Papildus tika uzdots jautājums par nākotnes perspektīvas satura noskaidrošanu: „Kādi ir Jūsu dzīves nākotnes plāni un mērķi?”. Rakstā tiks apspriesti un atklāti pētījuma rezultāti.

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## MŪZIKAS ZINĀTNE: PĒTĪJUMI UN PIEREDZE

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## SCIENCE OF MUSIC: RESEARCHES AND EXPERIENCE

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## GIOVANNI PAISIELLO OPERA WORKS CHARACTERISTIC STYLE FEATURES

Opera at all times was considered of the most exalted and noble musical art form. One of the greatest Baroque Italian opera composers Giovanni Paisiello turned Opera Buffa. In ancient Greece it was thought that music is able to affect human nature, so the music used in the youth upbringing. Opera Buffa theme is becoming increasingly more important as people are looking for a means by which they could gain emotional relaxed and positive emotions, which allow people to get rid of emotional alienation, which is observed in society in the 21st century. Composer's opera have a parody and satire, so the authors of the study will focus on deeper composer's creative style characteristic features.

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## VERISTIC OPERA IN GIACOMO PUCCINI CREATION

*Key words: style, verism, veristic opera, Giacomo Puccini.*

Italian culture after the establishment of an independent state in 1870 from close to realism art direction - verism (from it. vero - real, true), seeks to discover the lives of ordinary people without romance embellish, - delves into the details of home, naturalistically accurately reveals the biggest tragedies of ordinary people. The first veristic opera success associated Pietro Mascagni and Ruggiero Leonkavallo word, but bright sequel gets Giacomo Puccini's works.

Giacomo Puccini – Italian opera composer, one of the most prominent representatives of verism. According to different studies, called the largest Italian operas composer by Verdi. His work influenced verism principles, but the best composer of 12 operas become a classic belcanto peak psychologically nuanced, romantic, realistic and democratic art.

Melodic unusually gifted, Puccini was closely followed by his belief that music and opera operation must be an integral. For this reason, in Puccini opera no overture. It is well-known so-called “Puccini octave” – a popular and well-known technique orchestrations. Impressionists influence the music heard timbral bright colors.

Today very rare opera season schedule can be compiled without including at least one of this composer’s music, the more the Latvian National Opera (LNO), the new 2014/2015 season, the main guideline is directly Giacomo Puccini.

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## **SUBSTANTIAL PECULIARITIES OF CHOIR CREATIVE WORK OF JAVIER BUSTO**

***Keywords:*** choir, creative work, style, postmodernism, peculiarities of genre

Choir music nowadays is widely represented and sufficiently developed not only in Latvia, but also around the world.

Postmodernism involves various music styles and genres, therefore it can be called the next phase of modernism.

Javier Busto is an internationally recognized composer with Spanish origin, a conductor and a teacher-trainer of new conductors in many countries of the world. A composer states that two features can characterize his music: rock and Basque national folklore, which are also present in religious works.

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## **THE CREATIVE FEATURES OF COMPOSER RIHARDS DUBRA**

***Key words:*** Rihards Dubra, sacred music, themes, vocal music genres.

Sacred music plays an important role in the cultural life of Latvia. It is performed not only in churches, but also in concert halls as independent, universally humane, with the liturgy unconnected musical works. Many Latvian composers have been focused on the creation of sacred music. One of the brightest composers, who has been creating music on spiritual themes for nearly 30 years, is Rihards Dubra. His music is highly appreciated not only in the European countries, but also in America, Asia and South Africa. In 2003 the composer received The Great Music Award of Latvia for the composition *Te Deum XXIII*, but in January this year he has been nominated for this award again for the composition *My Soul Doth Magnify the Lord*.

This work examines the creative peculiarities of R. Dubra – the themes, writing style and vocal music genres of his compositions. The composer’s contribution to Latvian culture is relatively poorly studied and insufficiently popularized.

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## **PECULIARITIES OF FRANZ LISZT'S PIANO CREATIVE WORK**

**Key words:** *piano music, style of piano, interpretation.*

Franz Liszt is one of the greatest representatives of music romanticism. His work represents a concentration of such features of romantic method as broadening of figurative content, search for new forms and means of expression, striving for synthesis of branches of art, programming. Being a brave innovator, Liszt enriched and broadened expressive means of music art (melody, harmony, instrumentation). Piano music is prevailing in the composer's creative heritage, as he addressed it during his whole creative way. Liszt developed a tradition of concert – virtuosic pianism; its main peculiarity is orchestration: profusion of colours and sounds, a free inclusion of the whole instrumental diapason, "large stroke" prevailing, which is aimed at space of big concert halls. The composer's innovation in the field of piano music lays exactly in piano symphonic interpretation. In the foreground of his piano style one can notice brilliance, might, vibrance, pathos of declamation, masterly scale, improvisational approach to material, which, undoubtedly, required creation of new forms for pianists' performance technique. The art of touch became the most complicated and diverse part of piano technique. Liszt's discovery of new colourful opportunities in piano sound, has played an important role in further evolution of piano music.

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## **PIANO-PERCUSSION ENSEMBLE: MAIN TENDENCES IN XX AND XXI CENTURIES MUSIC**

The use of percussion instruments in 20<sup>th</sup>- and 21<sup>st</sup>-century music strongly increased. This tendency influenced an approach to piano technique. Such composers as S.Prokofiev, I.Stravinsky and B.Bartok showed piano connection to percussion instruments in their music. J. Cage's composed pieces for prepared piano which emulated sound of the gamelan orchestra. Composers started to use piano in ensemble with percussion, for example B.Bartok's Sonata for Two Pianos and Percussion, A.Gherman's *Haute Tension* for piano and percussion, J.Psathas *Matre's Dance* for piano and percussion and others. Similar processes happened in jazz music. In the XX century 20's appeared first jazz trio recordings.

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# DATORZINĀTNES TEHNOLOĢIJAS UN PROGRAMMĒŠANA

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## COMPUTER SCIENCE TECHNOLOGIES AND PROGRAMMING

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### KURSABIEDRU FOTOROBOTA IZSTRĀDE

In the present paper were observed the following points: 1)The main purpose of an identikit; 2)Other ways of the usage of the identikit's varieties and for what purposes. In this research was investigated the points what is an identikit, its main usage and where else are used the technologies of this type. Hypothesis, was not approved, that the identikit is a program which is necessary only for the aim of a construction of a human's face. After the research work were made the following conclusions: 1)The idea of an identikit is mainly used for entertaining software programs' and games' creation; 2)The identikit gives the opportunity to construct almost precise human's face; 3)The identikit is more often used for the seeking of criminals; 4)The idea of the identikit is often used in order to know what appearance a person will have in the future or which hair color best fits to a person, or how would look a person's child. In the present research was investigated what is necessary to create the identikit. The identikit which was created during the research became the main element in the game in which a player can change the identikit's different parts of the face, for example, form of the nose. The main conclusion is that there are no ideal identikits and it is not possible to create software which would contain endless number of a human's face details.

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### MOBILE APPLICATION DEVELOPMENT IN TITANIUM

Mobile applications play a significant role in the digital world these days. The primary purpose of mobile applications is to simplify user interaction with a mobile device (mobile phone, tablet) and make it easier to browse content.

Thanks to the huge amount of mobile applications as well as web applications ability to adapt mobile device, one has to do a careful and prudent planning, so to be sure the mobile app is really useful and attractive to the end user. Design, usability and performance are the main prerequisites for a successful mobile application. Studies have shown that more than 50% of users delete a mobile application when they encounter at least one error. This means a careful testing is necessary. More than 50% of mobile applications are downloaded and used just once. It highlights the importance of the functionality and usability – does the mobile app help user to solve actual problems?

Thanks to diversity of mobile operating systems, one has to decide which operating systems will be supported. Every operating system offers native technologies to build mobile applications, however it is possible to optimize the resources and develop a mobile application targeted for different operating systems, using the same code basis. Such option is provided by a mobile development environment – Titanium, which supports iOS, Android, Windows Phone, BlackBerry and HTML5 application development.

Is Titanium the best solution for mobile application development? What are the restrictions, advantages and what are disadvantages comparing to native technologies? Why there are some

developers that recommends avoiding Titanium? In which cases Titanium is the best option? There are many factors that determine the choice of development environment. The article describes Titanium options, special features, development specifics and perspective. It discusses cases in which and why Titanium is a way to go and in which cases native technologies are a better option.

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## **USING GPS FOR LOCALIZATION IN MULTI-ROBOT SYSTEMS**

During the last years localization and path planning in multi-robot systems research has become one of the most actual directions in the robotics. The multiple robot system, in comparison with the single robot system, has the advantages of collecting and integrating multiple sensor data from different robots. Accordingly, the system can obtain better localization performance and increase the robustness of the localization accuracy for each robot by fusing collected multiple sensor data. Localization systems of multi-robots can be classified into two main categories: absolute and relative positioning systems. Absolute localization determines the robot's position in a global coordinate framework, such as the global positioning system GPS, but relative localization also is called egocentric localization, where each robot attempts to determine the position of other robots in its own coordination system. Recently, some research works start to focus on integrating the sensor data from multiple sources in order to remove the uncertainty of the absolute or relative position of mobile robot. Most of research commonly used methods include: (Triangulation, Kalman filter and Monte Carlo Localization). These approaches have improved position accuracy as contrast with the methods utilizing information from single robot. On the other hand, these approaches are relatively complex because they deal with statistic parameters. In addition, they are usually applicable to robots in indoor. In outdoor systems such as group of quadcopters relative position data is needed only for precision in maneuvering, but GPS data for entire group absolute localization and automation.

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## **COLLISION DETECTION IN 2D ANDROID GAME DEVELOPMENT**

In most real-time games, collision detection is an integral element that holds everything together. It refers to the computational problem of detecting the intersection of two or more objects. Most of the time we have to deal with simple geometric shapes – circles and rectangles. In some cases detection of more complex polygons or sprite pixel-perfect intersection is required. In this presentation we'll look into some most important algorithms applied to Android 2D game development.

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## **INTEGRATION OF MULTIMEDIA SOLUTIONS FOR LABOUR SAFETY INSTRUCTIONS IN CONCEPT OF LABOUR PROTECTION**

The use of IT and multimedia in training process increases the quality and efficiency of personnel training, enables the application of the differential approach for training, considering the individual peculiarities of the trainees, as well as strengthens the learning motivation and the development of the creative cognitive activity. In order to solve these problem situations, the integration of IT multimedia

solutions in the system of labour protection is proposed in the report. Various technological and functional interactive multimedia solutions are integrated in the modern concept of labour protection: interactive tablets, multimedia objects, interactive stands, navigation in multimedia presentations, interactive applications with touch-screen management, wall projections, video materials connecting text, three-dimensional graphics and audio in multimedia. In the course of the research it was planned to create attractive, clear digital material that address the personnel of the organization by different means. Thus, with the help of modern technologies, traditional labour safety instructions convey more complete and voluminous, therefore more qualitative information. The depiction of this kind of content in the attractive form provides information and allows the employees of different age and experience understand the necessary information and develop the ability to use it in practice.

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## **STUDENTU PADOMES ONLINE VĒLĒŠANU SISTĒMAS IZVEIDE**

In this work important role plays online voting system and why online elections is better than paper. In this research was acquire information what exactly is online voting, finding maybe someone has already implemented online elections and what criteria are mandatory to implement in this system. Most of the research time took to realize the student security system for that elections would be closed and anonymous. In the end system was launched in test mode and students were able to try out and vote for Students council candidates.

### ***Māris Vigulis***

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## **CAPTCHA**

In my work, I will tell about CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) system, which I use in my course work. Nowadays technologies is well developed, and it can be used to harm. In web-site which I am creating are many forms which user need to fill. So I decided that it is necessary to use CAPTCHA to verify input, distinguish human actions from robots actions, and protect web-site from spam. In presentation I will tell about how CAPTCHA works and how, where and why I use it in my web-site.

### ***Jevgenijs Kalinins***

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## **CHALLENGES FACED BY INTERNET SERVICE PROVIDERS IN LATVIA**

Given the significant transformation in the telecommunications industry, ISPs are facing with same challenges in the Latvia. I would like to present the most common challenges for Service Providers. I will follow this up with some suggested solutions.



**Andrejs Radionovs**

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## **APPLICATION OF FUZZY LOGIC FOR ECOLOGICAL RISK ASSESSMENT**

Risk assessment is an important task in many areas of human activity: ecological, technical, economic, etc. Usually risk assessment is carried out on the basis of statistical methods. But in many cases, risk assessment must be carried out under the conditions of lack of initial information or uncertainty of information. To overcome the lack of objective information experts' estimation is often used. For that reason, special risk assessment methods are needed. One of them is the usage of fuzzy logic approach in risk assessment. In this work, fuzzy logic approach is used to manage this uncertainty in information concerning situations where chemical releases can harm not only the environment but also human health.

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**MATEMĀTIKA**

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**MATHEMATICS**

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**Pēteris Daugulis, Jeļena Rukšāne**

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## **CONTINUED FRACTIONS AND PELL EQUATION**

Pell equation is a simple quadratic equation which is solved by a nontrivial method involving continued fractions. Continued fractions and their properties are discussed. Pell equation, its solving method and history are discussed. Difficult new cases are solved.

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## **ON A NUMBER OF POSITIVE SOLUTIONS FOR PARAMETER DEPENDENT THE SECOND ORDER POLYNOMIAL DIFFERENTIAL EQUATION**

We consider the second order polynomial differential equation. By analyzing the phase plane we provide estimates of the number of positive solutions of the Dirichlet boundary value problem.

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## **ON MULTIPOINT BOUNDARY VALUE PROBLEM**

The three-point boundary value problem is considered. The resonance conditions and conditions for solvability of the resonant problem are derived.

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## **DIRICHLET BOUNDARY VALUE PROBLEM FOR ONE SYSTEM OF DIFFERENTIAL EQUATIONS**

The differential system  $x''=ax+by+\gamma(x,y)$ ,  $y''=cx+dy+\psi(x,y)$ , where  $\gamma(x,y)$  and  $\psi(x,y)$  are continuous and bounded functions with  $\gamma(0,0)=\psi(0,0)=0$ , is considered together with boundary conditions  $x(0)=y(0)=0$ . A solvability of this problem and similarity of solution's phase trajectories with Lissajous curves is investigated.

**Inna Kononova**

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## **DIFFERENTIAL EQUATIONS WITH PERIODIC COEFFICIENTS**

Ordinary linear differential equations with periodic coefficients are considered. A possibility to solve equation by reducing it to equation with constant coefficients is investigated.

**Valentīns Sengilejevs**

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## **HAMILTONIAN FUNCTIONS OF LINEAR SYSTEMS**

Linear differential systems, which are Hamiltonian systems, are considered. Analyzing the corresponding Hamiltonian function, an existence of periodic solutions of system is investigated.

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## **ON SOME BOUNDARY VALUE PROBLEMS FOR PLANAR SYSTEMS**

We consider the planar system  $x'=ay(1+bx^2)$ ,  $y'=-ax(1+by^2)$ , where  $a,b>0$ , together with nonlocal boundary conditions  $x(0)=0$ ,  $x(1)=x(n)$ , where  $n$  belongs to interval  $(0,1)$ .

**Tatjana Barkāne**

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## **ON MOORE-NEHARI PROBLEM**

We consider the boundary problem  $x''=-2q(t)x^3$ ,  $x(-1)=0=x(1)$ , where  $q(t)$  is a specific discontinuous function. We are interested in multiple solutions of the problem.

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## ON SOME BOUNDARY VALUE PROBLEMS

We consider some classical results about Dirichlet boundary value problems and illustrate them with examples.

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## ĶĪMIJA UN BIOANALĪTIKA

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## CHEMISTRY AND BIOANALYTICS

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## ALKOHOLISKO DZĒRIENU FALSIFIKĀCIJAS UN TĀS NOTEIKŠANAS METODES

Alkohols ir atkarību izraisoša (narkotiska) viela, alkohola lietošana kā Eiropas, tā arī Latvijas sabiedrībā ir ieguvusi tik plašu sociālu akceptu un nozīmīgu vietu sabiedrības norisēs, ka tā drīzāk ir uzskatāma par normu, savukārt pilnīga atturēšanās no alkohola lietošanas drīzāk ir izņēmums – nevis otrādi. Vairāk nekā puse jeb 53% Latvijas iedzīvotāju atzīst, ka nespēj atšķirt viltotu labi zināma zīmola alkohola pudeli no oriģināla un pētījuma dati liecina, ka puse jeb 50% Latvijas iedzīvotāju ir iegādājušies viltotu vai bezakcīzes pazīstamu zīmolu alkoholu.

Pētījums par alkoholisko dzērienu falsifikācijām un tās noteikšanas metodēm tika veikts, lai pierādītu, ka piedāvātajā ražotāju plašajā alkoholisko dzērienu klāstā atrodas arī falsificēti alkoholiskie dzērieni un kā tie ietekmē cilvēka organismu.

Pētījumā tika izmantota faktiskā spirta tilpumkoncentrācijas noteikšanas metode izmantojot piktometrijas mērījumus, elektroniskās densimetrijas mērījumus (balstoties uz parauga rezonējošo svārstību frekvenci oscilācijas elementā) un metode izmantojot mērījumus ar hidrostatisko sveršanu.

Doto metožu pētīšanā un alkoholisko dzērienu falsifikācijas analizēšanā tika izmantoti alkoholiskie dzērieni, tādi kā: viskijs, konjaks, degvīns un etilspirta ūdens šķīdums.

Alkoholisko dzērienu falsifikācijas ir ļoti dažādas. Tās atšķiras no alkoholisko dzērienu tipa un klases, kā arī no alkoholisko dzērienu izgatavotāja.

Pēc veiktām gāzu hromatografijas analizēm iespējams noteikt, katra alkoholiskā dzēriena saturu, kā arī ķīmiskos piemaisījumus.

Alkoholiskie dzērieni satur aldehīdus, spirtus, n-propanolu, n-butanolu, sarežģītos ēsterus, metilacetātus, etilacetātus, acetonu, etanolu, metanolu un acetaldehīdu. Šīs visas vielas izraisa depresiju, tahikardiju, elpošanas traucējumus, miegainību, bezsamaņu un pat komu.

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## **OPTIMIZATION OF FLUORESCENT STAINING PROTOCOL FOR INVESTIGATION OF DIPLOSTOMUM SPP. METACERCARIAE USING CONFOCAL LASER SCANNING MICROSCOPY**

**Key words:** *Diplostomum spp.*, aminobenzanthrone dyes, fluorescence, confocal laser scanning microscope, fixation, protocol.

Nowadays are widely applied various microscopic techniques (optical microscopy, scanning probe microscopy, electron microscopy), for organisms species determination and morphological structure studies. The main advantages of confocal laser scanning microscopy are ability to take optical sections and images with high resolution. High intensity laser light initiates fluorescence. Fluorescence is the property of some atoms and molecules to absorb light at a particular wavelength and to subsequently emit light of longer wavelength. To visualize object, it is stained in fluorescent dyes. Fluorescent dyes attaches to studied object as a result of complex biochemical reactions. Objects can be studied in reflected or transmitted light.

The aims of this study were: 1) optimize fluorescent staining protocol for *Diplostomum* genus metacercariae investigation, using two different types of fluorescent dyes – aminobenzanthrone and hydrochloric carmine; 2) to evaluate interaction between different kind of fixatives and metacercariae, and further effect on the research.

Method according to Bykhovskaya – Pavlovskaya (1985) was used for fish eyes parasitological investigation and 600 *Diplostomum* genus metacercariae were isolated from eyes lens.

Fluorescent staining protocol consists of following steps: fixation, staining, destaining, and dehydration, clearing and mounting in Canada balsam or warm Glycerin Jelly. Different solutions: Boyin's solution pH = 1.69; Carnoy's solution pH = 3.90; AFA solution pH = 3.69; and 96% ethanol were prepared and used for *Diplostomum* spp. metacercariae fixation. Parasite were stained in aminobenzanthrone dyes, which were synthesized at the Faculty of Natural Sciences and Mathematics of Daugavpils University by a nucleophilic substitution of the mobile bromine atom in 3 – aminobenzanthrone: C<sub>26</sub>H<sub>20</sub>N<sub>2</sub>O (P6); C<sub>21</sub>H<sub>17</sub>NO<sub>2</sub> (ABM); C<sub>22</sub>H<sub>20</sub>N<sub>2</sub>O (AM16). Parasites were dehydrated in a graded ethanol series: 70%; 80% and 96% ethanol; cleared in 50% xylene – ethanol solution, xylene or methyl salicylate.

The samples were examined with confocal laser scanning microscope Nikon Eclipse Ti – E motorized inverted microscope system, with the computer software – NIS Elements Advanced Research 3.2 64 – bit. Fluorescence were excited by laser wavelengths  $\lambda = 405$  nm with (DAPI) filter;  $\lambda = 488$  nm with (FITC) filter;  $\lambda = 561$  nm with (TRITC) filter;  $\lambda = 638$  nm with (Cy5) filter.

Based on the comparative analysis of the recovered parameters, we suggest the dyes ABM and AM16 to investigate morphological features of metacercariae, but P6 dye to investigate external structure of parasite. In further studies, we are planning to use hydrochloric carmine as a fluorescent dye and lactic acid as a clarifying agent, compare the results and optimize staining protocol.

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## **PERCH MUSCLE TISSUE PROTEIN DYNAMICS OF DIFFERENT SEASONS**

Other than water, proteins are the most abundant type of chemical in the human body. Proteins play many vital roles in the human body, including providing structure and strength to cells and tissues, controlling biochemical reactions and aiding the immune system. Metabolism is regulated by proteins,

as are hormones and the various activities they control. Proteins also regulate cell division, which acts to replenish aged or damaged cells to ensure a constant supply of healthy cells. Proteins can be used as an energy source, only if carbohydrate and fat consumption is low, or in case of high energy consumption. Proteins emerge with meat and plant consumption. Fish is one of the most important sources of animal protein.

Purpose of the research is determination of protein quantity in perch muscle in different seasons, using nitrogen-retention indirect method – taking into account the quantity of nitrogen, calculate the protein quant and nutritional value of the protein.

The Research used 15 perch samples each season, therefor total of 45 perch were collected during winter, spring and summer periods. All objects were obtained from one water bodies – Dublinieku Lake.

Protein was used for indirect Kjeldahl method, which has been adapted for use in muscle tears. The method is based on the principle of nitrogen isolation from a perch muscle, with the help of mathematical calculation for protein quantity determination.

The Research is not yet completed, because the autumn period perch is investigated yet samples are collected. The protein quantity calculated during the study is increases from the winter to the summer period.

The scientific literature suggests that the nutritional value of fish and warm-blooded animals are equivalent. The chemical composition of fish varies, depending on species, food resources, water, season and other factors. Protein in different fish species ranges from 15% up to 22%. Fish protein structure slightly differs from warm-blooded animal protein structure. Some amino acids (lysine, tyrosine, tryptophan) fish protein is even greater than the muscle warm-blooded animals. Whereas fish contains many arginine, histidine, lysine and histidine (amino acids, which promotes growth), they are particularly recommended for children. Vast amount of methionine, in fish protein, normalizes lipids and cholesterol metabolism.

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## **POTENTIOMETRIC DETERMINATION OF AMMONIA IN MODIFYING ADMIXTURES FOR CEMENTS AND CONCRETES**

The article provides an overview of the problem of ammonia emission from the building structures in the building spaces. Sources of ammonia emission from cement concrete of building structures are discussed in detail. The main possible reasons of ammonia accumulation in concrete are the following: cement transportation in unpurified wagons; the presence of heightened content of grinding intensifiers that are injected during cement milling; the presence of ammonia in fly ashes that are used as mineral admixture in cements and concretes; chemical modifying additive agents that are injected in concrete mixture. Chemical modifying additive agents mainly used on the territory of Belarus are investigated from the perspective of the main source of ammonia in concrete. Potentiometric method with the using of ion-selective electrode on ammonia and Nessler's calorimetric (photometric) method called Nesslerization are used to determine free ammonia in solutions as basic and control methods respectively. It was shown that ammonia content both in imported cements and in cements produced on the territory of Belarus are strongly influenced by its content including the quantity and the type of admixture and conditions of hardening of concrete as a final product. It was determined that thermomist treatment of hardening concrete in most cases lead to elimination (decrease of content) of water-soluble ammoniac compounds. The urgency of the research of ammonia content in the building structures is considered from the perspective of the immediate health effects of ammonia exposure.

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## **STUDY ON N-ALKYLATION AND N-ACYLATION REACTIONS ON 3-AMINODERIVATIVES OF BENZANTHRONE**

Benzanthrene dyes are intensely studied, because wide range of uses for them are well known. They possess excellent color qualities and high photo stability, which enables their usage as dyes in fabric, laser diodes, polymers, medicine and LCD screens. In this work 3-aminobenzanthrone and 2-bromo-3-aminobenzanthrone, their synthesis and properties such as N-alkylation and N-acylation, in order to obtain new luminescent benzanthrene dyes are described.

Alkylation reactions for both compounds with ethylbromoacetate and dimethylsulphate were studied. Reactions with ethylbromoacetate did not occur, and with dimethylsulphate, a huge amount of side products were found.

3-Aminobenzanthrone N-acylated compounds are described in literature, therefore acylation was conducted with 2-bromo-3-aminobenzanthrone, by analogy with 3-aminobenzanthrone acylation methods – with acetanhydride, acetylchloride and benzoylchloride. Reaction with acetanhydride did not occur, but with acetylchloride and benzoylchloride corresponding acylation products were obtained.

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## **TEMPERATŪRAS IETEKME UZ RAPŠU EĻĻAS SASTĀVU UN ĪPAŠĪBĀM**

Pētījuma mērķis ir izpētīt rapšu eļļu, tās sastāvu un īpašības atkarība no temperatūras. Šajā darbā „Temperatūras ietekme uz rapšu eļļas sastāvu un īpašībām” tika izpētīta rapšu eļļa SIA „Iecavnieks & Co” dažādā temperatūrās diapazonā. Tā kā rapšu eļļai ir liela nozīme ražošanas nozarē, rapšu eļļas pielieto arī pārtikas rūpniecībā. Tiem ir enerģētiska nozīme kā vielām, kuras ietilpst uztura sastāvā un kurām noārdoties līdz galaproduktiem – un atbrivojas liels enerģijas daudzums. Šeit arī var atrast informāciju par ogļūdeņražu grupām un veidiem un par dažādu rapša eļļās iegūšanas veidiem, to ķīmiskajām un fizikālajām īpašībām. Pētījumā tika izmantots gāzu hromatogrāfs, kā arī apskatīti gāzu hromatogrāfijas principi, vērtības, prasības.

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# FIZIKA

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# PHYSICS

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## **ELECTRICAL AND MORPHOLOGICAL CHARACTERIZATION OF HYDROTHERMALLY GROWN ZNO/CUO NANOSTRUCTURES**

On the planar ITO electrodes, ZnO nucleuses were obtained using electrolysis in  $Zn(NO_3)_2$  aqueous solution. Special solution of  $Zn(NO_3)_2 + C_6H_{12}N_4$  was prepared for hydrothermal growth of ZnO structures. Growth process took 4 hours at 80°C. SEM analysis indicated presence of highly oriented ZnO nanocrystals. CuO nucleuses were obtained using electrolysis in  $Cu(NO_3)_2$  aqueous solution. Solution of  $Cu(NO_3)_2 + (C_6H_{12}N_4) + (NH_4) + (C_{12}H_{22}O_{11})$  were used for hydrothermal growth of CuO structures. Growth process took 5 hours at 80°C. XRD analysis indicated presence of CuO and  $Cu_2O$  phases. CuO/ $Cu_2O$  ratio can be altered by changes in chemical composition of hydrothermal growth solution. Investigation of ZnO/CuO samples indicated presence of p-n junction in contact zone of two layers.

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## **INFLUENCE OF GROWTH CONDITIONS ON WELL ALIGNED ZNO NANOSTRUCTURED ARRAYS USING HYDROTHERMAL GROWTH METHOD**

ZnO is very perspective material due it's electrical and optical properties for application in electronic, gas sensing, electromechanical devices etc.

Hydrothermal growth method is simple, inexpensive, environmentally friendly method at low temperature. Using this method ZnO nanostructures have a wide range of different morphologies due it's sensitivity to growing conditions, that is why it is important to understand growing mechanism: by knowing influence of different factors we can obtain ZnO nanostructures with predicted morphology and preset physical properties by simple changing one growing parameters and maintaining another without changing chemicals or equipment.

This study investigated the influence of hydrothermal growing parameters, such as growing temperature, seed layer preparation method and seed layer thickness, growing solution concentration on ZnO nanostructure arrays.

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## **MICROSTRUCTURE FORMATION IN AMORPHOUS CHALCOGENIDES BY WET ETCHING METHOD**

New materials are synthesized and studied for applications in photonics. Chalcogenides are typically photoresists, which can change solubility under influence of light. This property can be used to create microstructures by using wet etching method. Aim of the study is to develop material with high change of solubility after irradiation, since this property would allow to create finer microstructures. Optical properties of new materials are also studied.

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## **GENERATION OF CUO/ZNO AND CUO/TIO QUANTUM DOTS BY TERMINATED GAS CONDENSATION (TGC) METHOD**

In this work was produced CuO/ZnO and CuO/TiO quantum dots by terminated gas condensation (TGC) method. Received quantum dots have been investigated by Atomic Force Microscopy (AFM), spectrophotometer and Raman Spectroscopy (RS). By means of a AFM have been made nanoparticle pictures and their actual sizes are ascertained, RS has defined structure of the received points and has confirmed that nanoparticles will consist of some copper oxide, zinc oxide and the titan oxide, and the spectroscopy has defined shift of absorption and transmittance in a film from nanoparticles. The research urgency is the method by this quantum dots was received.

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## **PHONON DISPERSION RELATIONS FOR LINEAR LATTICE**

Lattice vibrations can be classified into relatively simple modes of oscillations (phonon dispersion relations). The purpose of this research is to calculate phonon dispersion curves for one dimensional lattice.

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## **RESEARCH OF ROBOT LINKS ARTICULATED**

**Key Words:** 1 DOF, 2 DOF, 3 DOF, control system, robot arm, manipulator, mathematical model, robot dynamics

In robotics science there are two main trends of in the design of robotics. One of them is the design of specialized or special robots, that perform certain technological operations, serve specific devices they are accurate, quick-acting and reliable, but these robots have usually a few level mobility. Another trend of robot design is the design of universal multifunctional robots that perform more technological operations, have more levels of mobility, but they have more difficulties in achieving greater positioning accuracy, reliability and their design is expensive. This article provides the



analysis of the most widely applied in practice robotic arms in order to reveal their diversity and perspective working peculiarities for their effective usage. Research paper analyzes the running parameters and difficulties of different robotic arms, which are similar in their design, but different in their control systems level, i.e. running of 1, 2 and 3 DOF (degrees of freedom) robotic systems. There is analysis of dynamic mathematical models of these three different kind of DOF robotic systems which are contained of mathematical models of DC motors that rotate robotic arm links and direct position-task models. After estimating the missing parameters of robotic arms' motors, 1, 2 and 3 DOF robotic arms' models have been created by software package "Matlab Simulink", which allows to set controlling voltages and observe the change of currents, torque, chain speed and trajectory over the current time.

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## **THE EFFICIENCY OF ARTIFICIAL INTELLIGENCE SYSTEMS OF AUTONOMOUS MOBILE ROBOTS AND TENDENCIES FOR DEVELOPMENT**

**Key Words:** *mobile robot, control system, fuzzy logic, neuron net system, artificial intelligence.*

In all over the world, there is an increasing number of discussions about the newest and most actual science research object – artificial intelligent system development, i.e. there are many international seminars, scientific conferences and other form of meetings of scientists in which not only the new achievements, practical problems, but also development perspectives of artificial intelligent system. As consequences, it is necessary to systematic analysis of nowadays stage and problems of development of artificial intelligent systems. This articles analyzes running effectiveness and development perspectives of artificial intelligent system of mobile autonomic robots. Research paper provides a brief analysis of differentiation of robot system definition in automatics and information technologies sciences. Nonetheless, the research object of this article is artificial intelligent system for robot control that is based on fuzzy logic and neuron net system methodic while genetic calculating and probability substantiation are not analyzed in this article. This articles analyzes the basic principles and existing systems of fuzzy logic, neuron networking peculiarities, and common architecture of artificial and specific neuron nets. Moreover, there is analysis of the most popular hybrid artificial intelligent system like neuro-fuzzy, fuzzy-genetic and other hybrid systems.

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## **ИСПОЛЬЗОВАНИЕ ЛАЗЕРНОГО ОБЛУЧЕНИЯ ДЛЯ АКТИВАЦИИ ПРОЦЕССОВ РОСТА ОБРАЗОВАНИЙ ZNO**

The process of forming the structures of ZnO by hydrothermal deposition from a solution of zinc nitrate hexahydrate ( $Zn(NO_3)_2 \cdot 6H_2O$ ) and hexamethylenetetramine ( $C_6H_{12}N_4$ ) by laser irradiation activation at various temperatures have been researched. It was observed that on the sample surface in places of influence of the laser radiation it is exist an active growth of zinc oxide structure. In the case of high temperature is observed that the structures ZnO have more pronounced crystalline character.

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# VESELĪBAS ZINĀTNES

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## HEALTH SCIENCES

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### **ANTHROPOMETRIC INDICATORS AND BODY COMPOSITION OF FOURTH GRADE STUDENTS OF DAUGAVPILS VIENĪBAS ELEMENTARY AND SASKAŅAS ELEMENTARY SCHOOL**

*Key words: pupils, anthropometry, height, weight, BMI, composition of the body, muscle strength, dynamometry*

The physical development of primary school children is an actual field of biomedicine. The staff members from the anatomy and physiology department together with the students from the program of physiotherapy in 2014 took part in a research project “*Physical activity and physical readiness of primary school children as an indicator of their health*” that was carried out in cooperation with Daugavpils Educational department. One of the tasks of the study was to evaluate the development of 4th grade pupils’ physical development. 74 children took part in this research. The authors have studied the length, weight and the muscle weight as part of pupils’ body composition. Individual measurements of the lengths, weight and BMI indicators were compared with the norms set in Latvia. The obtained results indicate to a relatively high variety of anthropometric indicators. The results gained from the dynamometry indicate that the muscle of the hand of the observed pupils is lower than the average indicators.

The study of the composition of the body proved that for the majority of pupils muscle weight and the weight of fat can be considered as normal. The amount of water in the body was within the norms only for 20% of participants.

While carrying a research the authors come to a conclusion of a need to inform parents and teachers in fostering a healthy style of life in development of children, as well as to foster a better understanding and active participation in promoting an active style of life in the development of a child, as well as to foster a better understanding of pupils’ and their active participation in strengthening one’s health.

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### **EFFECT OF REGULAR WATER CONSUMPTION ON BODY COMPOSITION IN WOMEN AFTER THE AGE OF 35 YEARS**

*Key words: water, body composition, women.*

Water is by far the most abundant substance for all know living forms, it is essential to life, as all metabolic processes occur in a water medium (Grandjean A.C., 2004).

Water facilitates cellular metabolism and proper cellular chemical functioning. People consume water in pure form as drinking water and mineral water and with other liquids (juices, nectars, drinks, milk), as well as 20% with water as a part of food (EFSA, 2010).

Water requirements are determined by several factors: an individuals metabolism, environmental conditions, eating habits, season, and activity level, and are therefore extremely variable. The amount for total water intake for women is 2 L and for men are 2,5 L daily (Havensone G., 2011).

The arguments for such an amount of water intake is because our bodies consist mostly of water (50–70% of body weight; 42 litres) and our blood, muscles, brain, and bone are made up mainly of water (85%, 80%, 75%, and 25%, respectively). Therefore, we need water to function and survive and we need at least eight 8-ounce glasses of water each day (Valtin H., 2002).

The aim of the study is to determine how regular water consumption affects body composition parameters in women after age of 35 years.

The main research method is bioelectrical impedance analysis (BIA) or body composition measurement. Using BIA measurement on the first and the 30th day of the intervention, the following parameters are assessed: body fat, visceral fat, body mass index, muscle mass, bone mass, total body water, metabolic rate, metabolic age. All women are instructed to intake 8 glasses of water each day in one month. Additionally, all tested women fill in a questionnaire consisting of 12 questions about their water and other liquids consumption habits, knowledge of water impact on health.

Results show that regular water consumption positively affects several body composition parameters in women after the age of 35 years. Total body water, muscle mass increases, but body and visceral fat decreases after the month of regular consumption of 8 glasses of water daily.

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## **IODINE INTAKE LEVEL FOR GROWN-UPS IN LATVIA BASED ON DATA FROM THE NATIONAL FOOD CONSUMPTION SURVEY OF LATVIA 2012–2014**

Iodine is an essential nutrient for mammals, required as a mandatory structural and functional element of thyroid hormones. Maternal iodine deficiency during pregnancy results in fetal iodine deficiency causing complications with fetal brain and impacting early brain development.

In Europe iodine deficiency problem is associated with iodine deficiency level that lead to poor school performance, reduced intellectual ability, and impaired work capacity being not only health, but economical problem as well. On the basis of the national medians of urinary iodine (UI) for the 32 European countries – the populations of 19 countries have adequate iodine nutrition, 12 have mild iodine deficiency, including Latvia, one moderate iodine deficiency. In 2004, it was calculated that 20 % of 2 billion people around the world at risk of iodine deficiency live in Europe.

Data from The National Food Consumption Survey of Latvia 2006–2009 shows that iodine intake in population range from 57,2 to 68,3 µg per day, respectively 30% from recommended nutrient intake. Data from 2010/2011 showed that 36% of school-aged children could be exposed to mild iodine deficiency, but 6% to moderate iodine deficiency (detected by UI).

To assess the latest iodine intake for grown up population in Latvia, data from The National Food Consumption Survey 2012–2014 (n=2000; aged 19–64) were used. Consumption data were collected using 24h-recall method and Food Propensity Questionnaires (FPQ). To calculate iodine intake consumption data about iodine rich products – marine products, eggs, milk, and food products derived from them, drinking water, were used. Iodine concentrations in the products used for calculations were based on literature data. The iodine concentration of water and foods is highly variable.

Daily iodine intake for population (based on FPQ) varies from 49 µg to 310 µg per day. Calculations are made using same product groups taking into account the lowest and the highest possible concentrations found in literature. This difference highlights problem that analyses for products available in Latvia's market are needed. Depending on sex, iodine intake of men per day using average concentrations of iodine in products is 185 µg per day, but for women 161 µg per day. This is 93% and 81% from recommended daily intake.

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## **FREQUENCY OF JOINT HYPERMOBILITY OCCURRENCE AMONG SWIMMERS**

**Introduction.** Joint is called hypermobile if its range of motion exceeds the norm, taking into account the age and gender of the person. Joint hypermobility is primarily caused by more flexible tissue, which is determined by genetic inheritance. Joint hypermobility is considered as an advantage, and at the same time as a disadvantage. For many it is a value, which gives increased ability in sport. Swimming is recommended for persons with joint hypermobility in order to improve the overall muscle tone.

**The aim of the study.** To assess the frequency of joint hypermobility occurrence among swimmers.

**Materials and methods.** A prospective study was conducted, involving swimmers of Riga who were in the age group of 14–23 years, engaged in swimming for at least 5 years and have reached at least III Sports class. 9 joints were assessed after Beighton score and the range of their movement was measured with goniometer. The data obtained was analyzed using IBM SPSS program.

**Results.** Study involved 53 swimmers, 41.5 % (n = 22) women and 58.5 % (n = 31) men. The average age of 17.2 ± 2.5 years, with an average of 9.91 ± 2.9 years of swimming experience. 71.7% of respondents had a joint hypermobility. Hypermobility was occurring the least frequently among Brass swimmers, hypermobility was occurring in 46.7% of them (p = 0,011). There is no statistically reliable data that suggests, that continued occupation with swimming increases joint movement range. Control group – 30 young people of the same age, 33.3 % of the respondents had joint hypermobility.

**Conclusions.** Joint hypermobility is more common among swimmers than the rest of the population. Swimmers who swim in Brass, compared to swimmers who use other styles, have less flexible joints.

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## **WHOLE-BODY VIBRATION AS A TRAINING METHOD OF STRENGTH AND PERFORMANCE OF LOWER EXTREMITIES AND BALANCE IN BASKETBALL PLAYERS**

Whole-body vibration (WBV) is a neuromuscular training method (Apple et al., 2010) which has showed to improve strength, power, balance, and bone strength (Pollock et al., 2012). In basketball, the standard strength takes a leading role in training; strength training allows players to improve their physical abilities and athletic performance and, therefore, their outcomes during games and to prevent injuries (Boccolini et al., 2013). Because of growing interest of the use of this method researchers in athletic training and sport performance have begun to explore the use of WBV in a trained population (Hand, Verscheure, Osternig, 2009).

The study aimed to investigate and to compare the effect of a 4-week period of whole-body vibration training and strength training on basketball players' lower extremities performance and balance.

Seven basketball players attended a 4-week training session on a vibration platform. Prior the training and after the intervention each participant performed balance test, plyometry jump test and countermovement jump test (Jump-CMJ test) using *Myotest performance measuring system*, and manual muscle testing was performed by the examiner.

The results showed increase of functional parameters of plyometry jump test and Jump-CMJ test. Plyometry test results showed the positive effect of training on a vibration platform on vertical jump height, ground contact time and reactivity. Jump-CMJ test showed the positive effect of training on

jump height, power and velocity. There were no significant differences in vertical jump force, despite the fact that it increased in 6 subjects. Positive statistically significant changes were observed in obliques muscles strength and strength of gluteus maximus. All balance tests showed increase of balance performance except the Bondarevska balance test which didn't show statistically significant difference of mean balance test time.

In conclusion, 4-week training session on a vibration platform increases muscle strength of abdomen and lower extremities and lower extremities performance. The other significant benefit of vibration training is improvement of balance.

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## **ACUTE SIDE EFFECTS FOR NURSES AND NURSING ASSISTANTS OCCUPATIONALLY EXPOSED TO ANTINEOPLASTIC DRUGS**

**Introduction.** Not only patients but also healthcare workers are exposed to antineoplastic drugs (cancer chemotherapy drugs). Due to their adverse effects, antineoplastic drugs are considered as potential health risk for nurses and nursing assistants especially development of short-term and long-term side effects is possible.

**Aim.** The aim of this research was to collect and summarize information about acute side effects of antineoplastic drugs in two major cancer centers in Latvia and the possible correlation between antineoplastic drugs and work experience.

**Material and methods.** In total 51 nurses and nursing assistants responded to the research. All the participants of the research were women working in chemotherapy ward at least for 12 months. The research was conducted in Pauls Stradins Clinical University Hospital, Department of Chemotherapy (DC) and Riga East University Hospital, Oncology Centre of Latvia, DC. All information was reviewed with MS Excel and IBM SPSS software.

**Results.** The average of work experience in DC was 8,63 ( $\pm$  8,109) years. 56,86% of respondents stated at least one side effect since working in DC. An acute side effect such as headache is the most common one (37,25%), followed by irritation of eyes (25,49%), irritation of skin (19, 60%), dizziness (13,72%), irritation of mouth and throat (7,84%).

Headache ( $p = 0.021$ ), dizziness ( $p = 0.018$ ), irritation of mouth and throat ( $p = 0.043$ ) and irritation of eyes ( $p = 0.004$ ) had statistically significant association with years of working in DC.

**Conclusions.** More than half of respondents had at least one acute side effect since working in DC. The most common complaints were headache and irritation of eyes.

Nurses and nursing assistants working for longer time in DC were more likely to have headache, dizziness, irritation of mouth and throat and irritation of eyes.

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## **DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM: THE KNOWLEDGE OF GYNECOLOGISTS, OBSTETRICIANS AND PUERPERAL WOMEN ABOUT PROPHYLAXIS**

**Introduction.** The risk of venous thromboembolism increases 10 times during pregnancy, childbirth and postpartum periods. Deep vein thrombosis and pulmonary embolism (DVT/PE) are a serious pregnancy and postpartum complications, which can be fatal. Nowadays, correctly assessing risk and under medication or/and non-drug prevention, it is possible to completely avoid these complications.

**The aim.** To find out the awareness of gynecologists and obstetricians of what is DVT/PE risk and prophylaxis. To clarify awareness of the puerperal women of DVT / PE prophylaxis.

**Methods.** Surveys and the analyzing of information gained of gynecologists and obstetricians, puerperal women was used as a research tool. The data was collected and processed in a computer programs MS Word, Excel. Data analysis is planned to carry out through descriptive statistical methods.

**Results.** 65 gynecologists and obstetricians and 104 puerperal women were interviewed. 85% gynecologists, obstetricians inform the pregnant woman about DVT / PE risk and provide the following recommendations: compression socks – 67%, physical activity – 44%, fluid intake – 25%, a phlebologist advice – 22%, preventive, drug therapy – 15%. 54% of the surveyed has a DVT / PE guidelines. 68% know that in Latvia there are designed guidelines for DVT / PE. 80% of medical practitioners informed about necessity of physical activity for puerperal women, 53% – for the early activation, 80% – of the need to hydrate, 74% – of the need to drink after childbirth. Compression stockings were recommended for 15% during pregnancy, 13% after birth, 10% in post-natal period. 37% of medical practitioners of puerperal women informed them about the increased risk of venous thrombosis, of which 22% told how to reduce the risk. 46% were able to name at least one preventive measure.

**Conclusion.** In Latvia there is an insufficient assess of DVT / PE risk and compliance control during pregnancy when occurring the maternity and after giving birth, which leads to increased risk of maternal morbidity and mortality. In health care facilities there are often no DVT / PE guidelines / algorithms which could evidence doctors low knowledge about DVT / PE prophylaxis. Pregnant women are aware of DVT / PE and prophylaxis measures far too little.

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## **RISK FACTORS FOR PULMONARY EMBOLISM**

**Introduction.** Pulmonary embolism (PE) is an acute cardiovascular pathology which can be fatal if not diagnosed in time. There are several risk factors which should be recognized in order to prevent the development of PE or to help arrive at the diagnosis.

**Aim.** To clarify the risk factors and their frequency in PE patients.

**Material and methods.** The information is collected from medical archive of Pauls Stradiņš Clinical University Hospital about 190 patients of Latvian Cardiology Center who were treated with the diagnosis of PE from 01.01.2013.–31.10.2014. Data were analyzed using *IBM SPSS* program. Average rates are presented as median [I; III quartile], while the incidence – as percentages (n – in absolute quantity).

**Results.** From 190 patients 66.3% (126) are women and 33.7% (64) men. The average age is 74 [66; 79] years for women and 64 [52, 76] years for men. The main and direct risk factor is deep vein thrombosis (DVT), occurring in 39.5% of PE patients – women 34.1% (43) vs. male 50% (32). DVT occurs more frequently on the right side – 48.6% (17) in women vs. 58.6% (17) in men, and in lower leg veins – 50.0% (8) vs. 75% (12).

Essential hypertension occurs in 61.1% (77) vs. 39.1% (25) (more often Stage 2). Chronic heart failure – 63.5% (80) vs. 57.8% (37) (more often functional Class II for women, but for men Class III by NYHA). Atrial fibrillation occurs in 27.8% (35) vs. 32.8% (21) (more frequently permanent form), but old myocardial infarction – 15.1% (19) vs. 28.1% (18). Type 2 diabetes appears in 18.3% (23) vs. 14.1% (9). Other risk factors – fractures, orthopedic surgery, obesity, oral contraceptives, hormone replacement therapy, tumor, stroke – occur rarely <10%.

**Conclusions.** PE non-modifiable risk factors are age  $\geq$  64 years and female gender (two times more occur in women). Modifiable risk factors are deep vein thrombosis, essential hypertension and chronic heart failure, as well as permanent form of atrial fibrillation, old myocardial infarction and others.

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## **A STUDY OF SURVIVAL RATE AFTER CARDIOPULMONARY RESUSCITATION (CPR) IN CLINICAL CENTRE “GAILEZERS”**

**Introduction.** If cardiopulmonary resuscitation (CPR) is early initiated, it increases the chances of survival by 2–3 times. However, short-term cardiac arrest episode is characterized by multi-organ damage in connection with ischemia.

**The aim of study, material and methods.**

To evaluate the CPR pace and the patient's vital functions after the CPR and also through analyzing the examinations performed to evaluate the most frequent complications. To gather 55 patients, on whom in 2012 was performed CPR, medical information available in the archives of Clinical Centre “Gailezers”. The data was analyzed using IBM SPSS program.

**Results.** Study involved 55 patients, 20 women and 35 men. The average age of 61,6 [20;86] years. CPR was initiated to 1 patient before emergency medical treatment (EMT) arrival, 30 in EMT and 24 at the hospital. Discharged were 54.5% patients, dead 45.5% patients. During the CPR occurring heart rhythms: asystole with 1.8% patient, ventricular fibrillation 43,6% patients, ventricular tachycardia 52,7% patients. When analyzing the ECG before the CPR 10,9% patients have sinus rhythm, 1 day after the CPR sinus rhythm – 27,3% patients, after being discharged – 34,5% patients. From early complications the most frequent is CNS lesion, developed 40% patients. Of late, the most frequent complication is pneumonia, noted in 21, 8% patients. Was noted that pneumonia results as a late complication in patients with mechanical ventilation (MV) more often than in patients with spontaneous breathing.

**Conclusion.** Most of the CPR are made in EMA stage and there is the lack of data on the patient's condition prior to the CPR. The most frequent early complication is the damage to the CNS, which is the most common complication after a total of the CPR. As the most frequent late complication can occur pneumonia, which tend to develop more often in patients with MV.

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## ĒRČU ENCEFALĪTA EPIDEMIOLOĢISKĀ SITUĀCIJA UN ENDĒMISKĀS ZONAS LATVIJĀ

**Ievads.** Ērču encefalīts ir infekcijas slimība, kas skar cilvēka centrālo nervu sistēmu un var izraisīt smagas neiroloģiskas komplikācijas. Ērces ir vektors, kas pārnēsā slimības ierosinātāju – ērču encefalīta vīrusu (EEV).

**Pētījuma mērķis.** Aprakstīt ērču encefalīta epidemioloģisko situāciju Latvijā laika periodā no 2000. gada līdz 2013. gadam.

**Materiāls un metodes.** Slimību profilakses un kontroles centra epidemioloģiskās uzraudzības un imunizācijas monitoringa datu analīze dažādos griezumos.

**Rezultāti.** Laikposmā no 2000. līdz 2013. gadam Latvijā kopumā reģistrēti 4175 gadījumi. 2000. gadā reģistrēti 544 saslimšanas gadījumi ar ērču encefalītu, 2001. gadā – 303 gadījumi, 2002. gadā – 153 gadījumi, 2003. gadā – 365 gadījumi, 2004. gadā – 251 gadījums, 2005. gadā – 142 gadījumi, 2006. gadā – 170 gadījumi, 2007. gadā – 171 gadījums, 2008. gadā 184 gadījumi, 2009. gadā – 328 gadījumi, 2010. gadā – 494 gadījumi, 2011. gadā – 429 gadījumi, 2012. gadā – 376 gadījumi, 2013. gadā – 265 gadījumi. Pētījuma gaitā tika izveidotas kartes, kurās atzīmēts slimības gadījumu skaits uz 100 000 iedzīvotājiem dažādās teritoriālās vienībās – rajonos un statistiskajos reģionos Latvijas teritorijā laikposmā no 2000. līdz 2013. gadam. Analizējot situāciju, var secināt, ka visā Latvijas teritorijā ik gadu mainās EEV endēmiskās zonas.

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## FINANŠU UN SAIMNIECISKĀS DARBĪBAS ANALĪZES JAUTĀJUMI

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## ISSUES OF FINANCES AND COMMERCIAL ACTIVITY

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## CONSUMER LOYALTY EVALUATION: EMPIRICAL EVIDENCES IN TELECOMMUNICATION SECTOR IN LATVIA

The aim of this study is to create a survey based on proposed conceptual model and to measure consumers' loyalty and its antecedents in telecommunication sector.

Nevertheless theoretical literature suggests measuring loyalty taking both attitudes and behavior into account, still many companies do not understand the real concept of loyalty relying only on re-buying behavior or use only net promoter score as loyalty measure. This could be a challenge to find *real* loyal customers in the sense of both attitudes and behavior and to manage them. Moreover the topic is of current interest as today telecommunication sector is very fast developing and has very high level of competition. Customers have a big enough choice and the barriers to switch are decreasing. The company should find, manage and analyze loyal customers properly.

The conceptual model shows process of loyalty formation including antecedents and components of loyalty to company, brand or product. Authors compare different loyalty evaluation methods to find the most suitable. The resulted model is based on theoretical and empirical literature and is supplemented with sector specifications. As the result, authors put forward proposals and draw conclusions about the model using in practice. The conceptual model is used to create the survey were



each construct is measured using proposed survey questions. Data are collected from customers in telecommunication sector.

The results allow making conclusions about consumers' loyalty levels and shed some light on antecedents of loyalty, but only those can be affected to increase level of loyalty. The proposed model will give chance to accurately analyze consumer's loyalty definition and explanations. The questionnaires can be used for telecommunications companies to analyze their consumer's loyalty and make marketing communications to a target audience.

The following research methods are used – scientific literature analysis, consumer questionnaires, and statistical analysis.

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## **FACTORS CAUSING IN-WORK POVERTY IN LATVIA AND OTHER COUNTRIES OF THE EUROPEAN UNION**

The working poor are working people whose incomes fall below a given poverty line. Depending on how one defines "working" and "poverty", someone may or may not be counted as part of the working poor.

While poverty is often associated with joblessness, a significant proportion of the poor are actually employed. Largely because they are earning such low wages, the working poor face numerous obstacles that make it difficult for many of them to find and keep a job, save up money, and maintain a sense of self-worth.

The existing micro-level studies on the working poor point at a crucial characteristic feature of in-work poverty – there are in different angles to the working poor. The broad comparative perspective allows for a separation of different institutional influences, namely the influence of the degree of decommodification, defamilization, and bargaining centralization.

On the one hand working poor can be regarded as poor persons who are working, on the other as working person who are poor. Each perspective has far-reaching consequences for the undertaken research: studies following the latter perspective – working but poor – often stress the relevance of labour-market related factors. But it's also important to focus on the question of how such differences can be explained from a broader perspective of poverty research. In general, there are results that confirm both welfare state measures and labour market institutions have an influence on in-work poverty.

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## **ANALYTICS OF MARKETING SERVICES DEVELOPMENT IN REPUBLIC OF BELARUS**

Formation and development of educational services market in Republic of Belarus makes actual significance of educational services marketing and running marketing research of education.

The research shown, that only 22.6% higher education institutions have marketing department and employees of this department often don't have degree as a marketing specialists. Analytics of advertising means being used shown, that the most popular means of advertising were printed material (73.6%) and advertisement in print media (79.2%). The less often used means of advertisement were: Internet advertising (17,0%), billboards (26,4%), scrollers (11,3%) and television advertising (18,9%). More likely, this is because those means of advertising are relatively expensive. The positive trend is, the majority of higher education institutions monitor effectiveness of different means of advertising by running inquiries for applicants.

As part of this research, inquiry for VSTU applicants was done. The main reason for this survey was to identify source of information about specialties available in this higher education institution. Results of this survey may be used for follow-up readjustment of means of advertising being used. As a result it was found out that the most popular source of information is Internet – 76.5%. Nevertheless, print media advertising is a source of information for only 6.4% applicants, but takes center stage among means of advertising being used.

Besides, it is very important under current circumstances to know what motivates applicants to choose higher education institutions. This research revealed the results: 1. Interest to the future profession – 77.1%. 2. Being in demand of future specialty in job market – 45.9%. 3. The location of higher education institutions – 19.8%. 4. High job compensation for professionals of this specialty – 21%. 5. Image of higher education institution – 19.8%. 6. Low admission score of specialty – 6.4%. 7. Low cost of education – 2.6%. 8. Having an opportunity to get a draft determent – 0.6%. 9. Parents', friends', acquaintance' advice – 0%.

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## **SYSTEM DYNAMICS MODELLING OF SOCIAL ECONOMIC DEVELOPMENT IN LATGALE REGION**

Several hypothetical scenarios of social economic development in Latgale region (Latvia) are generated using simulation model based on system dynamics methods. This paper is a logical extension of previous research. Improved and updated model made possible to eliminate weaknesses of future regional social economic development as well as possible growth drivers. The novelty of research is the design of the model, range of selected factors and their structure, dependency between factors and time horizon.

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## **ECONOMIC CULTURE IN THE CONDITIONS OF INNOVATIVE ECONOMICS**

***Key words:*** *economic culture, innovative economics, individual culture, transfer of innovations*

The aim of the article is to analyse mutual relations of the economic culture and innovative economics. The humanity is experiencing a new stage of the evolution of the world civilisation, i.e. the transfer to the innovative economics the main feature of which is the increase of the significance of intellectual and creative activity, the rise of the volume of scientific knowledge and information as the main industrial resources.

In the modern conditions of economic activity there is a sharp need of economic education that is the basis of formation of the economic culture of the society.

Economic culture of the society is the system of values and motives of the economic activity, the level and quality of economic knowledge, values and human performance, as well as the presence of traditions and norms that regulate economic relations and behaviour. Economic culture of the society has direct influence upon the economic culture of an individual, as the individual economic consciousness includes three main components: knowledge (opinions, views), as well as feelings and willpower of an individual.

There emerges a necessity to develop an absolutely new economic culture of an individual in which the main role is played by the economic education. Economic education has to contribute to the development of character of an individual, his abilities, skills, the formation of economic knowledge, modern way of thinking and behaviour, practical skills needed for social adaptation in the conditions of market economics.

However, at present we may observe inconformity of the level of economic competence, economic thinking and economic culture of labour resources with the requirements of the labour market. Thus, nowadays there are objective prerequisites for constant self-perfection of an individual, for acquisition of new social educational and professional skills as a factor of social and professional adaptation in the conditions of the development of innovative economics. In this respect, there is a problem of the formation of values that contribute to the self-determination, sustainability and the increase of viability of adults on the basis of the development of individual economic culture.

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## **LATVIJAS EKOZŅĒMĒJDARBĪBAS PIEMĒRI**

Referātā ir izanalizēta un strukturēta informācija par ekouzņēmējdarbības aspektiem Latvijā. Ir raksturoti ekoražošanas piemēri Latvijā.

Kaut gan Latvijā ir daudz importa preču, ir slēgtas vairākās rūpnīcas, Latvijā ir ļoti spilgti piemēri kā var veiksmīgi attīstīties ražošana, kas ir videi draudzīga, kas ražo ekoloģiski tīrus pārtikas produktus, būvmateriālus, kā arī citus produktus. Ādažos atklāta pirmā Baltijā bioloģiskās bērnu pārtikas ražotne. Latvieši izveidojuši ekoprodukta biznesu, kas pēc uzņēmuma pārstāvju paustā, divu gadu laikā kļuvis konkurētspējīgs pasaules tirgos. Latvijā ražotu sadzīves ķīmijas līdzekļu sortiments ir plašs – apģērbu un apavu kopšanas līdzekļi, tīrīšanas līdzekļi mājai un saimniecībai, antistatiķi, gaisa atsvaidzinātāji, profesionālie tīrīšanas līdzekļi, auto kopšanas līdzekļi un ekoloģiskie tīrīšanas un mazgāšanas līdzekļi. Tā kā Ligatnē papīru no otrreizējām izejvielām vairs neražo, pašlaik lielākā daļa Latvijā savāktā papīra un kartona nonāk pie pārstrādātājiem ārzemēs. Bioloģiskās lauksaimniecības produktu ražošanas apjoms Latvijā 2002. gadā audzis par 38,7 %, 2001. gadā – par 34,9 %. Ik gadu notiek ekoloģiskās konferences, kas ir laba iespēja iepazīties ar citu zinātnieku darbu, gūt apliecinājumu sava darba nozīmīgumam un, iespējams, idejas jaunam darba ceļienam.

Ekouzņēmējdarbības attīstība ir jebkuras valsts attīstības prioritāte, jo tā ir saistīta ar dabas aizsardzību, iedzīvotāju dzīves un veselības līmeni, saražotu produktu konkurētspēju u. c. svarīgiem aspektiem.

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## **SOCIO-ECONOMIC SUSTAINABLE DEVELOPMENT EVALUATION OF THE EU**

Referātā ir sniegti Eiropas Savienības reģionu ilgtermiņa sociāli-ekonomiskās attīstības indikatori, tie ir apkopoti dažādās grupās. Katra faktora iekšienē ir noteikti svāra koeficienti un ir noteiktas sakarības starp tiem.

Autors darbā nosaka ES reģionu ilgtermiņa sociāli-ekonomiskās attīstības problēmas, pretrunas, ir noteikti to cēloņi. Referātā ir atklāta ilgtermiņa sociālās un ekonomiskās attīstības pretruna, kas ir saistīta ar to, ka augsti attīstītas valstis ar lielu IKP sniegumu rada nopietnas bažas ekoloģiskās attīstības ziņā. Taču šajās valstīs iedzīvotāju labklājības līmenis ir ļoti augsts.

Šajās valstīs ir ļoti labi attīstīta rūpniecība, kas rada daudz izmešu, kuru apsaimniekošanu steidzami jāsakārto, jāizstrādā to apstrādes koncepcijas, jāmodernizē eksistējošās tehnoloģijas. Kaut gan ekoloģijas ziņā tā nav labākā vieta dzīvei, taču ekonomikas attīstība to kompensē, iedzīvotājiem ir augsts ienākumu līmenis, ir labi organizēta veselības aprūpe, kā arī citas sfēras.

Referātā ir definēta Latvijas vieta ES ilgtermiņa sociāli-ekonomiskās attīstības jomā, ir sniegtas rekomendācijas esošas situācijas uzlabošanā Eiropas Savienības reģionos.

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## **PLURALISTIC APPROACH ASSESSING TERRITORY DEVELOPMENT IN THE GLOBAL WORLD**

*Key words: territory development, integration, pluralistic and evolutionary paradigm of territory development*

The 2013 Human Development Report refers to the simultaneous enhancement of growth poles in the global world economic and geopolitical environment on the one hand, and the enhancement of the interconnection of this environment notwithstanding the existing dramatic gap in the socio-economic development of the territories, on the other, as the main feature of modern integration. At the same time, in the scientific literature on economics it is possible to find the suggestions on “the global economic order” or “global economic system” as opposed to the views that the modern world is a total of sets of “world-economies” according to Braudel. Although these worlds have to develop and look for their place in the global dynamics of dominant technological modes, they, at the same time, to a greater or lesser degree, preserve their fundamental nature, which has a different civilized context, cultural and institutional conditions as its basis. The sixth technological mode which is based on nano- and biotechnologies and which promotes the shift in the territory development keynote: the transformation of consumer society into society of a healthy lifestyle, a dramatic growth in the industry of a healthy lifestyle, etc. is on the agenda now.

The authors of the research claim that the main idea of different growth poles in the global world first of all should be conceptually understood and explained. Therefore, for this purpose they suggest using a pluralistic paradigm of territory development which unlike an evolutionary paradigm assesses the territory development from the viewpoint of its qualitative nature but not at what point of a linear economic revolution this or that territory is. Proceeding from this comparative perception of territory “developments” as equivalent but qualitatively (ontologically) different, in order to assess the level of territory development (maturity) in the global world it is necessary to use objective economic factors as well as social and biological and also subjective factors. Having applied the cluster analysis to the empiric material of the World Economic Forum and World Bank, the authors of the article managed to find more or less stable qualitative characteristics of modern “world-economies” as well as to identify a dominant character of interconnections between them.

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## **SABIEDRISKO INVESTĪCIJU IETEKMES NOVĒRTĒJUMS UZ REĢIONĀLAS EKONOMIKAS EFEKTIVITĀTI**

Dažādu reģionālo programmu finansēšana par Eiropas fondu līdzekļiem stimulē sabiedrisko investīciju pieaugumu un reģionālas infrastruktūras attīstību. Tāpēc nepieciešami objektīvi novērtēt sabiedrisko investīciju ietekmi uz reģionālo ekonomisko pieaugumu. Ražošanas funkcijas definīcijās sabiedriskā kapitāla, kā arī citu neražošanas faktoru, produktivitāte tiek izteikta caur kopējo faktoru produktivitāti (KPF). Reģionālas efektivitātes analīzei svarīgi ne tikai KPF līmeņa izmaiņas, bet arī salīdzinājums ar citu reģionu efektivitātes līmeņi dotajā laika posmā.

Referāta mērķis: sabiedrisko investīciju ietekmes salīdzinājuma novērtējuma metodes izstrāde uz reģionālo efektivitāti.

Izstrādāta metode ļauj novērtēt sabiedrisko investīciju ietekmes līmeni uz reģiona efektivitāti salīdzinājumā ar visu reģionu pamata indikatoru.

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## **SOME NOTES ON STATISTICS ON INNOVATIONS AND INNOVATION SUPPORT POLICY IN LATVIA**

Innovation is the engine of long-run growth of national economy. It should be noted that innovation is the result of the interactions among enterprises, policy-makers and the institutions that create the environment where enterprises innovate. Innovation support policies aiming to improve co-operation between the enterprises and institutions in the innovation system and to increase the ability of enterprises to identify and absorb new technologies, are most valuable. Analysis and understanding of the innovation survey results can help policy-makers to identify strategies for improving innovative performance and overall competitiveness of the national economy. Nowadays the majority of countries throughout the world conduct innovation surveys. In Europe they are known as the Community Innovation Surveys (CIS) and are conducted at regular intervals. Until now, little analysis on the Latvian innovation survey data was made by researchers and policy makers. This paper aims to discuss the last innovation survey results in Latvia, to refresh the importance of qualitative statistics on innovations both for Latvian and foreign users and to propose how the innovation survey data can be used by Latvian policy-makers. The author suggests ways to improve the data collection and their econometric analysis in Latvia.

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## **BORROWER'S CREDITWORTHINESS AS A FACTOR OF BANK CREDIT PORTFOLIO CREATION**

Characterizing borrower's creditworthiness as a factor of bank credit portfolio creation both in Latvia and all other countries, it must be taken into account that there are three major "agents" of bank credit portfolio creation – borrower and its creditworthiness; bank and its credit policy; the institutional environment of the credit market in a country. However, it is preferable to decide as precisely as possible which of them is the most important agent or factor of bank credit portfolio creation and what significance is attributed to the borrower's creditworthiness. To accomplish this task, the author of present research used the Global Competitiveness Reports that annually summarize the economic profiles of more than 100 countries including also financial market indicators.

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## **THE DEVELOPMENT OF THE COMPETENCES OF PERSONNEL MANAGEMENT FOR THE SECURITY OF VALUE-ORIENTED PERSONNEL MANAGEMENT IN THE ENTERPRISES OF LATVIA**

**Key words:** *value-orientation, value-oriented management, personnel intellectual welfare, wellness of the enterprise*

The goal of the article is to analyse the possibilities of the development of personnel managers' competences in order to provide the value-oriented management in the enterprises of Latvia. The topicality of the theme is defined by a growing need for the intellectual welfare in the enterprises that in turn creates the need for consummating the competences of management in Latvia so that it is appropriate with the tendencies of the leading conceptual understanding of European countries about

knowledge, skills and attitudes of the management as well as the development of the personnel intellectual welfare.

In the article there are discussed: the principles of the personnel value-oriented intellectual welfare management in the modern enterprise emphasizing the conditions of the intellectual welfare security, the principles of the development of personnel and the growth-enhancing management; the correlation between the comprehension of the feelings, emotions, values, behaviour and the value-oriented personnel management; the coherences of the health of the personnel and business development of enterprise.

In the article there are used the problems and their offered conceptual solutions: the theories of social constructionism, post-structuralism and axiology; the analyse of the security of the political intellectual welfare of EU; the analyse of the legislation of Latvia, R.Barret's recommendations for forming the value-oriented enterprise. In the analyse of the literature there are defined values which ensure the security of the intellectual welfare observing the value qualitative conditions in the certain environment – in the consumer society.

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## **THE ROLE OF META-ANALYSIS IN MARKETING**

The purpose of this paper is to illustrate the growing interest of meta-analysis in marketing literature and to present the methodological approach for researchers who are planning to use meta-analysis in their marketing research. The research also highlights limitations and problems to deal with during the study.

Today when researchers must face with a growing number of empirical studies in different areas, the importance of empirical generalizations grow up. Meta-analysis is the statistical analysis of a large collection of results from individual studies for the purpose of integrating and combining the findings. It is one of the dominant methods with a purpose to develop an empirical generalization.

The increasing interest about meta-analysis is recognized in marketing literature where researchers using meta-analysis have examined the influence of advertising on sales, the determinants of sales staff performance, consumer behavior patterns etc.

The author of the research provides the methodological description of the method as well as bibliographical study of journals in marketing studies, describing examples of meta-analysis usage in marketing.

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## **WHO ARE LATVIAN EARLY-STAGE ENTREPRENEURS?**

***Key words:*** *entrepreneurship, early-stage, business-cycle.*

Research has shown that entrepreneurship is an important driver for economic growth through employment, productivity improvements and overall welfare effects (Schumpeter, 1934, Acs and Audretsch, 1988, Wennkers un Thurik, 1999, Baumol, 2002, Acs and Storey, 2004). A developed small and medium-sized enterprise sector is a crucial condition for a country's competitive growth, because this sector produces most volume and employs the largest part of a country's labour force (Mulhern, 1995).

The level of early-stage entrepreneurship and inclusiveness of various groups in the entrepreneurial activity can give an insight on the dynamism and future potential of the country. Promoting entrepreneurship is also among main goals of the European Union. Realizing the importance of the issue, it is crucial to get a clearer understanding of early-stage entrepreneurship and its development over time.

The main aim of the paper is to shed light on early-stage entrepreneurs in Latvia – who are early-stage entrepreneurs, what are their aspirations in terms of growth, internationalization and innovations, what is their main motivation to get involved in entrepreneurial activity as well as the main reasons for business discontinuation. The analysis of the trends and development over time as well as comparative analysis with the other European countries are also made.

Repeated cross-section data of the Global Entrepreneurship Monitor (GEM) Adult Population Survey's (APS) for the time period from 2005 till 2013 is used for the analysis.

We find that early-stage entrepreneurs in Latvia are quite distinct from other groups of people. They differ from both employees and unemployed people by their demographic characteristics, human capital, financial resources and perceptions about entrepreneurial activity and the entrepreneurial environment in Latvia.

Latvian early-stage entrepreneurs are among those with strong international orientation and high growth ambitions.

In fact early-stage entrepreneurial activity in Latvia seems to be counter cyclical, i.e. it decreased in the boom but increased during the recession.

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## **INDICATORS OF SMART GROWTH IN REGIONAL LEVEL: METHODOLOGICAL ASPECTS AND THE WORLD EXPERIENCE**

*Key words: place-based approach, regional development, sustainability, creativity.*

The authors analyse the researches on the factors that influence regional development, their criteria, methods of calculations. In the strategies of sustainable regional development the accents are put on the various priorities in infrastructure, ecology, etc., disregarding the matters of social equality. Several resources emphasize the importance of geopolitical differences among the countries that, in turn, influence the approaches to ensure the regional sustainable development. The importance of state institutions and regional government, that take responsibility for the results of sustainable development at the regional levels, is essential. In addition, the new paradigm of regional development focuses on creativity and creative regional development. Creating an integrated and comprehensive development, the specific of the context or place-based approach with a stress on local assets and *know-how* is important. It can be concluded from the analysis of the resources that it is necessary to broaden and improve the understanding of the society about the complex challenges of sustainable smart development, as well as to make a coordinated list of prior problems and inform heads of the state and local governments, business leaders, scientists and other interested persons about these problems, emphasizing that these complex matters must be solved together, for sustainable development demands that the aim should be achieved together, holistically and not separately, respectively, an integrated (complex) approach is characteristic for sustainable development.

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## **МЕЖФИРМЕННОЕ СОТРУДНИЧЕСТВО: СУЩНОСТЬ, ПРИНЦИПЫ, НАПРАВЛЕНИЯ РАЗВИТИЯ**

В условиях глобализации и роста конкуренции увеличилось значение развития отношений сотрудничества между субъектами хозяйствования. Сегодня обособленное предприятие не будет обладать достаточными ресурсами и определенными навыками, в целях достижения конкурентоспособности и эффективности как на внутреннем так и на мировом рынке. Поэтому увеличивается значимость и роль сотрудничества между отдельными субъектами хозяйствования с целью повышения эффективности их функционирования. Межфирменное взаимодействие используется для того, чтобы объединить ресурсы и получить синергетический эффект.

Межфирменное сотрудничество – это такое взаимовыгодное взаимодействие фирм (предприятий) двух или более секторов, при котором совместно решается общая задача, и ориентированное на формирование и оформление партнерских отношений между бизнес-субъектами.

К принципам межфирменного сотрудничества можно отнести следующие: добровольность вступления в деловое сообщество; партнерские отношения (взаимный интерес); равноправие членов (в т.ч. на получение благ от делового сообщества); консолидация общих и индивидуальных целей; доверие между партнерами.

Межфирменное сотрудничество можно рассматривать на следующих уровнях.

Вертикальное межфирменное сотрудничество, которое предполагает развитие партнерских, взаимовыгодных отношений с поставщиками, потребителями (cooperation). Типами форм сотрудничества в данном случае будут: образовательные, инновационные (сотрудничество в инновациях), маркетинговые (сотрудничество в маркетинге), информационные, интеграционные сетевые структуры.

Горизонтальное межфирменное сотрудничество, предполагает формирование сотрудничества и партнерства с конкурентами (cooperation and cooptation). Формами такого сотрудничества будут являться совместные с конкурентами – субъектами сотрудничества программы, такие как образовательные, научно-исследовательские, маркетинговые, приграничного сотрудничества, экспорта, развития поставщиков, международного технологического сотрудничества.

Итак, межфирменное сотрудничество должно стать важным элементом национальной экономики, эффективное развитие которого может быть ускорено интеграционными процессами участников партнерств, позволяющими достигать синергетического эффекта за счет взаимодействия, обеспечения согласованности и координации деятельности всех ее участников.

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## **МЕХАНИЗМЫ ФОРМИРОВАНИЯ И ФУНКЦИОНИРОВАНИЯ ГОСУДАРСТВЕННО-ЧАСТНОГО ПАРТНЕРСТВА В ИННОВАЦИОННОЙ СФЕРЕ СТРАН-ЧЛЕНОВ ЕВРАЗЭС**

Механизм государственно-частного партнерства (ГЧП) в сфере научно-технологического и промышленного развития стран-членов ЕврАзЭС направлен на улучшение взаимодействия и развитие кооперации между государственными и муниципальными органами государств – участников ЕврАзЭС, хозяйствующими субъектами – организациями науки, образования, реального сектора экономики, социальной сферы, организациями и объединениями гражданского общества по наиболее перспективным направлениям исследований и



разработок, связанным технологически и/или имеющим единую область применения результатов и/или имеющих единое функциональное назначение. На основе имеющихся методологических подходов управления отношениями ГЧП, с учетом зарубежного опыта и целей экономической интеграции ЕврАзЭС предлагаются следующие этапы формирования и функционирования механизма ГЧП в инновационной сфере государств Евразийского пространства.

1 Этап - *Обоснование механизма ГЧП ЕврАзЭС*: разработка дорожной карты научно-технологического развития выбранных технологических направлений на пространстве ЕврАзЭС и программы исследований.

2 Этап - *Реализация механизма ГЧП ЕврАзЭС*:

1. Реализация программы исследований, корректировка программы.

2. Выработка рекомендаций по совершенствованию мер стимулирования кооперации в области научно-технологического и промышленного развития.

3. Организационное сопровождение функционирования механизма ГЧП в инновационной сфере.

Таким образом, механизмы ГЧП ЕврАзЭС дадут для экономик государств-членов сообщества следующие результаты:

функционирование некоммерческих партнерств компаний, научных центров, высших учебных заведений различных форм собственности, осуществляющих НИОКР по приоритетным направлениям развития науки и техники; оптимизация затрат национальных бюджетов, направляемых на финансирование НИОКР на основе национальных целевых программ; создание продуктов интеллектуальной деятельности, востребованных на мировых рынках наукоемкой продукции и обеспечивающих перевод экономики на инновационный путь развития.

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## **DZĪVOKĻU ĪPAŠUMU PATIESĀS VĒRTĪBAS APLĒSE**

Uzņēmumu bilanci ieguldījuma īpašumu sastāvā ir sastopami dzīvokļu īpašumi, kas ir paredzēti izīrēšanai. Saskaņā ar LR Ministru Kabineta noteikumiem Nr. 488 „Gada pārskatu likuma piemērošanas noteikumi” ieguldījuma īpašumus bilanci ir atļauts novērtēt patiesajā vērtībā, to patieso vērtību pamatojot ar līdzīgu īpašumu tirgus cenu aktīvā tirgū vai sertificēta nekustamā īpašuma vērtējumu. Dzīvokļa īpašumu patiesās vērtības aplēsei ir iespējams izmantot trīs pamatmetodes – kalkulācijas metodi, ienākumu kapitalizācijas metodi, un pirkšanas pārdošanas aktu tiešas salīdzinošas analīzes metodi.

Šī raksta mērķis ir analizēt un salīdzināt Starptautiskajos vērtēšanas standartos un citos literatūras avotos skaidrotās un sertificētu nekustamā īpašuma vērtētāju praksē piemērotās dzīvokļa īpašumu patiesās vērtības aplēsei izmantojamās metodes, ar mērķi pilnveidot dzīvokļa īpašumu patiesās vērtības noteikšanu. Raksta sagatavošanā izmantotas ekonomiskās analīzes un sintēzes, statistiskās un ekonometriskās pētījumu metodes, kā arī sertificētu nekustamā īpašuma vērtētāju aptaujas.

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# MĀKSLA LATVIJĀ: TRADICIONĀLAIS UN LAIKMETĪGAIS

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## ART IN LATVIA: TRADITIONAL AND MODERN

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### IESPIEDTEHNIKAS IZMANTOŠANA PLAKĀTU MĀKSLĀ

*Atslēgas vārdi: grafika, plakāts, iespiedtehnika.*

Grafika ir tēlotājmākslas veids, kur galvenie izteiksmes līdzekļi ir līnija un melno un balto laukumu savstarpējās attiecības, kuras veido vienotu kompozīciju. Mūsdienās tā kļūst arvien populārāka. Grafika ir daudzveidīga ar tehnikām, grafikas darbi var būt viena eksemplāra darbi, un ir tehnikas, ar kuru palīdzību attēlus var pavairot. Plakāts ir liela formāta attēls ar īsu tekstu, kurš ir domāts plašākai publikai. Pētījumā tiek aplūkota plakātu mākslas vēsture, bet lielāka uzmanība pievērsta plakātu veidiem un dažādām grafikas tehnikām plakātu mākslas kontekstā.

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### ATTĒLA UN TEKSTA MIJIEDARBĪBA LAIKMETĪGAJĀ MĀKSLĀ

*Atslēgas vārdi: teksts mākslā, teksts un attēls, teksta mijiedarbība, attēls un teksts laikmetīgajā mākslā.*

Teksts un attēls ir neatņemama sastāvdaļa laikmetīgajā mākslā. Ar mākslas izteiksmes līdzekli sastopas ikviens pasaules iedzīvotājs. Teksts un attēls ieņem nozīmīgu vietu ne tikai literāros izdevumos, mūzikā, bet arī mākslinieku mākslas darbos. Aktuāli mūsdienās informāciju nodot netiešā veidā, izmantojot attēlu kā ziņojuma nesēju. Mākslas darbā teksts var gan paskaidrot, gan nepaskaidrot neko, bet kalpot par grafisku rotājumu, rosinot skatītāju spēlēties ar tēliem. Liela nozīme teksta un attēla uztverei ir krāsu gammai un izmēram. Mākslas darbam, kurš izstrādāts kā attēls, izmantojot, teksta fragmentus ir psiholoģiska ietekme uz sabiedrību. Mākslas darbs, sniedzot informāciju, arī nemanāmi norāda savu kvalitāti. Šī pētījuma mērķis ir atklāt attēla un teksta mijiedarbības veidus laikmetīgajā mākslā.

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### RADOŠĀS DARBĪBAS IZPAUSMES LATVIEŠU GLEZNICĪBAS MANTOJUMĀ 20. gs – 21. gs.

*Atslēgas vārdi: radošā darbība, radošās darbības izpausmes, mantojums.*

Latviešu glezniecības mantojums – tās ir radošās darbības izpausmes un pamats ilgtspējīgai attīstībai. Mantojums ir sava veida atmiņa, mērķu apliecinājums un pieredze, kas tiek papildināta ar laikmeta vērtībām un nodota nākamajām paaudzēm. Radošās darbības izpausmes latviešu glezniecības mantojumā ir cilvēces vēsturiskā atmiņa. Tās aptver latviešu gleznotāju mākslas darbus, kuros ir attēlotas kultūrvēsturiskas vietas, ēkas, garīgas kultūrainavas un simboliskas vērtības. Radošās darbības izpausmes ir vērojamas gleznās, kuru autori ir, piemēram, spilgtākais ainavas žanra pārstāvis Latvijas mākslā Jūlijs Feders (1838–1909), Vilhelms Kārlis Purvītis (1872–1945) – latviešu

nacionālās glezniecības skolas aizsācējs, Jānis Rozentāls (1866–1916) – viena no spilgtākajām personībām mākslas vēsturē, radošās glezniecības pārstāvis Boriss Bērziņš – mākslinieks, kas Latvijas mākslas pūrā ir atstājis neskaitāmus darbus (lielākoties atrodas Latvijas Valsts Mākslas muzejā un privātkolekcijās), Edvards Grūbe, kurš radījis gleznas, liekot aizdomāties par mūžīgām vērtībām – mūžību, māti, zemi, maizi, Imants Vecozols – materiāla un gaismas mijiedarbes procesu studētājs. Pētījuma mērķis ir analizēt 20. gs. – 21. gs. latviešu gleznotāju radošās darbības izpausmes glezniecības mantojumā.

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## **FOTOGRĀFA AĻŅA STAKLES DAIĻRADES IZPĒTE UN ANALĪZE**

***Atslēgas vārdi:*** *Alnis Stakle, fotogrāfija, daiļrade, mākslinieks.*

Jau gadsimtiem ilgi cilvēki piešķir lielu nozīmi iespējai saglabāt atsevišķus dzīves mirkļus attēlos. Sākotnēji tas bija iespējams, izmantojot krāsas, zīmuļus un citus materiālus, ar ko radīt pēc iespējas tuvāku realitātes atveidu zīmējot vai gleznojot, tomēr šāds attēls nebija precīzs, tas bija aptuvenš un viegli manipulējams. 1826. gadā izgudroja pirmo fotogrāfiju, kas laika gaitā atklāja iespēju radīt reālistiskus attēlus.

Alnis Stakle ir 1975. gadā dzimis, ievēribu ieguvis latviešu fotogrāfs. Savu radošo darbību mākslinieks apvieno ar pedagoga darbu vairākās Latvijas augstskolās. Savukārt viņa fotogrāfijas tikušas atzinīgi novērtētas arī ārpus mūsu valsts robežām. Aļņa Stakles fotogrāfiju galvenie motīvi ir portreti, klusās dabas, privātās dzīves vides tuvplāni un distancēti tvertas vientulīgas ainavas. Pētījuma rezultātā tiek apskatīta un analizēta mūsdienu fotogrāfa Aļņa Stakles darbība un daiļrade.

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## **INTERACTIVE ELECTRONIC BOOK “BAROQUE ARCHITECTURE”**

***Key words:*** *interactive electronic book, art, baroque architecture, graphic design, computer graphics.*

The people use the interactive electronic books, magazines, catalogues more often and forget about the printed products in the new millennium. It is connected with the rapid infusion of technologies, because they play great role in different spheres of people's lives.

Searching for the analogues of the interactive electronic book was found out that, firstly, most of them are fairytales and encyclopedias for children; secondly, there are few books about art, including the Baroque style in architecture; thirdly, the electronic interactive books of the similar content in Latvian practically do not exist at the moment. Therefore was decided to create interactive electronic book about the Baroque architecture in Europe.

For this purpose were set the following research objectives: to study the concept, history of computer graphics and interactive graphics and their spheres of use; to study the fundamental principles of interactive Project development; to analyse the types of interactive electronic books and graphic design; to summarize the information about Baroque architecture in European countries; to develop the content and graphic design of interactive electronic book using the computer graphic programs Adobe Photoshop, Adobe Flash and Corel Draw.

The created interactive electronic book “Baroque architecture” is new and convenient material for the people to study the particular art sphere, regardless their age and occupation; for people who are interested in art and interaction with the informative environment.

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## **THE DESIGN AND VISUALISATION OF ANNUAL DESK CALENDAR "ARCH" IN AUTOCAD ENVIRONMENT**

**Key words:** *calendar, design, arch, 3D modelling, visualization, AutoCAD.*

The calendar is very important and daily needed object of interior and design. It has its own specific structure – information is placed in chronological order and contains some specified period, mostly a year. Although very popular are the calendars for each year, many of them are made so, that they can be used every year. Therefore, the aim of the present research is to create the design of annual desk calendar "Arch" and to visualize it in AutoCAD environment.

Within the research was summarized the information about the history, formulations, types, systems and constructions of calendars. For the design of the present calendar was chosen the arched form. The calendar consists of arch, basis, four cubs with figures and twelve plates with the month names. There were made the drafts of every component of the calendar and determined their sizes in AutoCAD two-dimensional section. Arch is fitted in such way, that it is easy taken out and set back in the basis. The basis is adapted to the arch and two cubs, the cubs are also adapted in such way, that the dates (figures) on the cubs could easy change the places. Thereby, two cubs will not disturb to see the dates which are in front. Two other cubs are placed under the arch and the plates with twelve months are placed on the arch, because it is easier to take them out and set back. There was created three-dimensional model of the calendar. To make the right layout of the calendar later made its visualisation. Arched desk calendar is made from environmentally friendly light wooden material *As/Door* from material list of the programme AutoCAD. The appropriate lights and shadows helped to show the calendar more visual and realistic. Moreover, there was made the desk surface to implement the calendar as the interior object more precisely.

The created desk calendar "Arch" as the environmentally friendly object of interior and design conforms to the requirements of holders and simplifies its functionality. It is easy used every year, as well as easy matches the interior.

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## **CONTEMPORARY QUILTS – INSPIRATION AND CREATIVITY**

**Key words:** *contemporary quilt, modern quilting, surface design, inspiration and creativity.*

Quilts created as art, destined from their inception to be displayed on walls, began to be noticed and acknowledged during the last quarter on the twentieth century. Although fundamental piecing and quilting techniques remain the same, quilters now have the freedom to go beyond the geometric and symmetrical block pattern or ornate applique styles and create something unique and personal. Quilt art, as this style is often called, now includes ways of creating fabric surfaces, painting, dyeing or transferring images to cloth, layering (using sheers or lace) and mixed media (including paper, plastics or metal) with the embellishment of mark-making threads, wools, metallics and beads. Textile artists use various techniques to create works of art using yarn, threads and fibers sometimes in combination with paints or dyes.

Modern quilting is a fresh approach reflecting each quilter's personality and personal style. Modern quilters embrace functionality, simplicity and minimalism, and use asymmetric designs in their approach. They reinterpret traditional blocks and patterns, and are often inspired by modern art and architecture. Bold colors, graphic prints and simple quilt lines are favored, as well as solids. White and gray are used extensively as background and as neutrals.

The aim of the work – to study contemporary quilt and to explore the usage of surface design in art quilt.

Modern quilts are functional rather than decorative and feature graphics designs, irregular shapes, and improvisational piecing. Without the distraction of prints and patterns, focus is placed on design and craftsmanship. Many quilting pioneers like Nancy Crow and Michael James with first are breaking the rules of quilting and developing dynamic designs that inspired new quilters.

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## **LATVIAN FOLK COSTUME AS AN ETHNIC SYMBOL IN THE 20TH CENTURY'S ART**

Themes reviewed in the research include works of painting, graphics and graphic design (book illustrations, postcards, posters etc.), which have been created in the 20<sup>th</sup> century in Latvia and outside it and in which various archaeological and ethnographic Latvian folk costumes are revealed as essential elements of the formation of the artistic image, expressing topical ideas by analyzing the artists efforts through symbolism of folk costumes.

The national romanticism in art, which dates back to the end of the 19<sup>th</sup> century, at the beginning of 20<sup>th</sup> century manifested into an increase interest of artists (for example, R. Zariņš and A. Čirulis) in ethnographic materials. Latvia was involved into an intensive process of collecting ethnographic objects, drawing national costumes and studying ornaments. At the same time artists tried to stylize the folk costumes and those who wore them, looking for a symbolic Latvian image that would help to strengthen the national self-confidence.

During the period between wars in the 20<sup>th</sup> century, the artists influenced by national identity used separate ethnographic elements, partly out of context, creating interpretations of folk costumes as a symbol of Latvians. Folk costumes in painting are reflected in different ways – from detailed realism to expressive stroke of the brush.

After World War II one can talk about art in two contexts – it is the art in Soviet Latvia and activities of Latvian artists in exile. Stylization of folk costumes in Latvia continue, but with an ideological trend. Works of folk costumes in exile are a sentimental reminder of the abandoned homeland.

In the late eighties of the 20<sup>th</sup> century with the recovery of national self-confidence during the Awakening, symbolism of folk costumes was of particular importance, whereas in the nineties, gaining Latvian independency and active participation in the processes of national development, the artists focused rarely on the interpretation of folk costumes in their works.

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## **SYMBOLS AND MARKS OF POWER IN ARCHITECTURE OF THE RĪGA CASTLE**

*Key words: Rīga Castle, architecture, symbols.*

At all times power has proved itself in architecture and the other way around – a building is often like a “mirror” of dominant economic and political force ideology and strategy. Authority representatives – vicegerents directly affected the appearance of the building which they built or changed. Due to the fact that the Rīgas castle was not seriously damaged, its architecture represents the legacy all of the vicegerants during 5 centuries. Since its very beginning, the Rīga castle has been seat of the state or territory vicegerents. Rīga citizens demolished part of the city wall and tower, to give a place for order's castle, which was later destroyed by themselves. But after short time it had to be built a new. During huge reconstruction in the 1st half of the 20th century former Medieval fortress have got majestic symbols of consciousness of the new national state. Over time symbols changed. However the Rīga castle still represents a ceaseless story about relationship between power and architecture.

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## **SEASIDE PARK IN LIEPAJA IN THE TIME OF THE REPUBLIC OF LATVIA UNTIL THE SECOND WORLD WAR**

**Key words:** *dendrology, composition, improvement, park, environment, greenery system.*

Proclaiming the Republic of Latvia, the economic structure in the new state changed. All urban municipalities had to take care of the master plan development in order to deal with the issues of the perspective development and functional zoning, create a qualitative urban environment. Since 1925 a high-quality therapeutic mud had been obtained in the surroundings of Liepāja. It was necessary to implement some improvement work on the seashore and in the resort – reconstruct the bath establishment. The new master plan was started to be worked out in the Technical Department of Liepāja City Board to make a qualitative urban environment in the city. The concept of facilitation was changed for Liepāja Seaside Park, and it complied with the development tendencies of public parks, which had appeared in Europe during the interwar period. Seaside Park encountered pleasant changes: the landscape was developed according to Latvian traditions by prominent landscape architects.

**Previous research:** Liepāja urban construction and the culture of landscape formation in the Republic of Latvia have not been analysed sufficiently, the research about the formation of the city greenery system is missing.

**Topicality of the subject:** ascertain the cultural-historical environment and landscape values of Liepāja in order to improve the city inhabitants' quality of life.

**Research goals:** find out architectonic spatial composition of Liepāja Seaside Park, the evolution of the functional and artistic solution in the 20s and 30s of the 20th century, identity of Liepāja, when implementing development projects.

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## **THE LATEST INTERNATIONAL TRENDS IN THE DEVELOPMENT OF THE ART OF ON STAGE ORATORY IN LATVIA**

Since the 1990s when Latvia's independence was restored, with the fall of the Iron Curtain culture and art have experienced a rich infusion of global experience. However, there has been a lack of analytical research in Latvian theatre art as to the state of on stage oratory in Latvia. This lecture is a first step in this direction.

Traditionally, the basic concept of "on stage oratory" has been interpreted as the orator's specific set of linguistic and paralinguistic means of expression, which form the impact of the actor's oratory on the viewer. However, nowadays, in explaining the mentioned term, one cannot suffice without incorporating a system of visual signs. Paralinguistic signs, in particular, belong to the oldest instruments of an actor's art.

Therefore this study considers the opinion of semiotician John Whitmore, which stresses the multi-dimensional nature of the play as a manifestation of art. Historically, the art of on stage oratory has not been an original manifestation exclusively characteristic of Latvian theatre. It differs from the experience of other countries in accordance with the idiosyncrasies of the sound of our language and utilising the drawing of the intensity, rhythm, style, taste and melody typical of our mentality.

There is a lack of systemic terminology in the Latvian language in the realm of on stage oratory. Therefore, one of the basic postulations of the study is to select and formulate concepts related to the art of on stage oratory, using the terms proposed by overseas theoreticians Irina Avtushenko, Valery Galandeev and Anna Petrova as a reference point. The second task is to ascertain and summarise the latest developments in other countries in the methodology of learning the art of on stage oratory, as well as their impact on theatre art in Latvia.

In the lecture, on stage oratory is analysed as the specific and effective quintessence of silence, noise and verbal music, which can be interpreted in two ways: firstly, as a precise reflection of the lexical meaning of a word; secondly, as a variation on the idea espoused through the text as interpreted by the director and performed by an actor.

Bearing in mind the current relevance of the subject, the study of the latest international trends in the art of on stage oratory could make a significant contribution to the overall Latvian cultural scene.

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## **SYMBIOSIS OF DIRECTING AND CULTURAL MANAGEMENT IN CULTURAL PROJECTS**

***Key words:*** directing, director, culture management, symbiosis, cultural project, festival.

Contemporary culture space is rich with cultural projects of commercial and non-commercial nature. In the era of information technology, the cultural manager offering the society a new culture product, must be sure, that it is individual, interesting, attracting attention of the target audience, creative, with identity and uniqueness. Not only the format of the cultural project is highly important, but also its idea, content and various artistic means of expression. All the aspects mentioned determines that increasingly bigger role in realisation of a successful project is based on a creative directing process and professional director who works on it in collaboration with cultural manager. The aim of this research is to analyse symbiosis of directing and cultural management in cultural projects, based on realised events.

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## **KULTŪRAS PROJEKTI BĒRNIEM: SPECIFIKA UN AKTUALITĀTES**

***Atslēgas vārdi:*** kultūras projekti bērniem, specifika, aktualitātes, koncepcijas.

Kultūras projekta veidošana ir komplicēts process, un tā specifika ir atkarīga no daudziem faktoriem: koncepcijas, mērķauditorijas, resursiem, iespējām u.c. Daudzveidīga un regulāra kultūras pieredze ir īpaši nepieciešama bērniem, jo tieši bērniem būtībā gūtā izpratne veido patstāvīgu pasaules redzējumu, pamatu veiksmīgai intelektuālajai izaugsmei un kreatīvu personību.

Pēdējo gadu laikā Latvijā ir ievērojami pieaudzis kvalitatīvu kultūras projektu (konkursi, radošās nometnes, mākslas darbnīcas, izstādes u.c. daudzveidīgi pasākumi) skaits, kuru tiešā mērķauditorija ir bērni. Pētījuma mērķis ir akcentēt spilgtāko kultūras projektu bērniem specifiku un aktualitātes Latvijas laikmetīgajā kultūras telpā.

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## **MŪZIKAS FESTIVĀLU MENEDŽMENTS LATVIJĀ 21. GADSIMTĀ**

***Atslēgas vārdi:*** mūzika, festivāls, menedžments, Latvija.

Analizējot jebkura veiksmīga pasākuma norisi, neatkarīgi no tā formas, idejas un lieluma, secinām, ka koncepcijas pamatā ir menedžmenta darbību komplekss, pēc kura vadoties var tikt realizēti visdažādākie mākslas un kultūras projekti. Viena no kultūras pasākumu norises formām, kuras īstenošanā pielietojami kultūras menedžmenta principi, ir festivāls. Kā jebkurš cits projekts, festivāls var tikt definēts kā unikālu procesu kopumu ar ierobežotu dzīves ciklu un resursiem, kura ietvaros ir

jāisteno noteikti uzdevumi, lai sasniegtu konkrētu, izmērāmu un mērķauditorijai nozīmīgu mērķi. 21. gs. festivāliem ir svarīga loma ne tikai kultūras, bet arī ekonomikas attīstībā. Festivāla organizēšanas procesā tiek aptvertas vairākas saimnieciskās nozares, kalpojot gan kā mārketinga elements konkrētas vietas popularizēšanai, tūrisma attīstībai un, līdz ar to, arī ekonomiskai augšupejai. Festivāliem Latvijā raksturīga ne tikai svētku noskaņa, īpaša atmosfēra un mākslinieciskais devums, tie sastāv no konceptuāli pārdomātas, producētas un atlasītas programmas, kuras mērķi sniedzas izglītojošā, informējošā, pieredzes apmaiņu, toleranci un sadarbību veicinošā funkcijā. Populārākais festivālu veids Latvijā ir mūzikas festivāli, kas aptver plašu mūzikas stilu spektru, kā arī dažādus mērogus – starpnovadu, valsts vai starptautisku. Visbiežāk mūzikas festivāla pamatā ir radoša ideja, vēlme popularizēt konkrētu mūzikas stilu, izpausties un meklēt domubiedrus vai arī konkrēti saimnieciski nolūki – popularizēt festivāla norises vietu.

Referāta mērķis ir izpētīt mūzikas festivālu attīstību Latvijā 21. gadsimtā, analizējot to organizēšanas principus un ietekmi uz saimniecības nozarēm valstī.

**Žanete Grende**

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## **LATVIJAS KULTŪRAS NOZARES PĀRSTĀVJU PRIEKŠTATI PAR STRATĒGISKĀS PLĀNOŠANAS LOMU NOZARES ATTĪSTĪBĀ**

*Atslēgas vārdi: kultūrpolitika, stratēģiskā plānošana, argumenti, komunikācija, kultūras profesionāļi*

Cilvēka spriedumus un rīcību ietekmē viņa izglītība un pieredze, kas praktiski ir pagātnes projekcija šodienas lēmumos. No pilnīgas noliegšanas līdz epohālam triumfam ir dzīvojušas idejas par plānu un stratēģiju noderīgumu. Vairums pasaules uzņēmumu un valstu izmanto plānošanu, stratēģijas un biznesa plānus kā pamatu, lai komunicētu ar sabiedrību, pārliecinot par ideju oriģinilitāti un veidotu argumentu bāzi finansējuma piesaistei gan uzņēmuma gada pārskatos, gan atskaitēs par valsts sasniegumiem. 2014. gada Saeimas priekšvēlēšanu kampaņas debatēs, kultūras profesionāļi vadošajos Latvijas kultūras medijos diskutēja par politisko partiju 4000 zīmju programmām un kultūras vietu tajās. Vai kultūras profesionāļi lietoja kultūrpolitikas stratēģijas kā argumentācijas un komunikācijas līdzekli?

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## **FILOLOĢIJA: PĒTĪJUMI, AKTUALITĀTES UN DISKURSS**

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## **PHILOLOGY: RESEARCHES, TOPICALITIES AND DISCOURSE**

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## **PORTRAYAL OF DAUGAVPILS LINGUISTIC LANDSCAPE IN THE PRESS OF 1920s AND 1930s**

Linguistic landscape (LL) is a set of written language signs in the public space that reflects the linguistic situation tendencies and provides information about the social and cultural life in a given space-time (Gorter 2006, Backhaus 2007, Lazdiņa, Pošeiko, Marten 2013). In diachronic aspect, the LL could be investigated in exploration of the publications of that time, obtaining extralinguistic data on the linguistic and cultural landscape, as in the press, e.g., names and locations of the establishments



and companies (including the information about moving to another building), year of foundation, phone numbers, description of areas of business activities and offers, details about the owner and staff can be found.

Two newspapers – “Latgales Ziņas” and “Latgales Vēstnesis” (1928–1939) are surveyed in the study to discover and characterize the information contained therein about the LL of Daugavpils, and public life, beliefs and values of the local population at the beginning of the 20<sup>th</sup> century. Content analysis was used to investigate press publications and to select the required excerpts, LL research method – for the data analysis and interpretation, and descriptive method – for summarizing the results and development of conclusions.

The following conclusions have incurred in the course of the study:

- 1) the press mainly contains the information about small local businesses that are related with trading of a variety of goods, the offer of domestic and catering services (e. g., *ēdienu veikals, J. Krūmiņa drēbniecība, pirmklasīga konditoreja-kafejnīca Francis*), and cultural events in the city club, restaurants (e. g., *Kontinents, Rēzekne*), cinemas (e. g., *Eden, Kolizej*) and the Latgale Public Conservatory (later – Daugavpils Public Conservatory);
- 2) Commercials of the companies contain an extensive listing and description of the offer; some of the commercials have photos added with the company’s outdoor advertising information;
- 3) In the excerpted material, Latvian language dominates, though the use of foreign languages in personal names (in posters, advertisements) and in the names of non-Latvian goods (in commercials) is found;
- 4) Personal names dominate in the ergonyms of local business, the nomenclature units are used often (e. g., *manufaktūra, tirgotava, ķēķis*);
- 5) In the commercials, advertisements and posters, the use of emotionally expressive vocabulary, the first person verb forms and possessive pronouns, forms of address and encouragement sentences can be observed.

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## DAĻĒJĀS EKVIVALENCES ATSPUGULOJUMS DIVVALODU LEKSIKOGRAFIJĀ

Kontrastīvajā lingvistikā par sastatīšanas un salīdzināšanas atskaites punktu var būt dažādu valodu vienību forma un nozīme. Pēc valodnieces L. Bairamovas sastatīšanas procesā būtiski ir divi jēdzieni: *kongruence* un *ekvivalence*. Ar *kongruenci* saprot valodas formu līdzību, savukārt ar *ekvivalenci* – divu vai vairāku valodu vienību nozīmju atbilstību.

Kopumā tiek šķirtas trīs ekvivalences pakāpes: pirmkārt, pilnīga – valodu vienību semantiskie komponenti un semantiskās struktūras ir identiskas; otrkārt, daļēja ekvivalence, kas realizējas *konverģences* un *diverģences* gadījumos (*diverģence* ir parādība, kad vārdam valodā A atbilst divi un vairāki vārdi valodā B, un *konverģence* – parādība, kad vairākiem vārdiem valodā A atbilst tikai viens vārds valodā B); un, treškārt, nulles ekvivalence, kuru precīzāk būtu saukt par atbilstmes trūkumu (Байрамова 1994).

Referāts veltīts daļējās ekvivalences gadījumu analīzei „Latviešu-krievu ilustrētajā vārdnīcā” (Apgāds *Zvaigzne ABC*, 2010). Vārdnīcas priekšvārdā teikts, ka tā ir pirmā ilustrētā latviešu-krievu vārdnīca, kas paredzēta tiem, kuri mācās latviešu valodu vai krievu valodu, iegūst izglītību bilingvāli, lasa vai tulko vidēji grūtus tekstus latviešu valodā, kā arī tiem, kuriem ikdienā nepieciešams gan saprast latviešu valodu, gan pašiem to lietot. Vārdnīcā ir vairāk nekā 16000 pamatvārdu, kas atspoguļo mūsdienu literāro latviešu valodu, kā arī vairāki simti ilustrāciju (Latviešu-krievu ilustrētā vārdnīcā 2010).

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## **СТРУКТУРНО-СЕМАНТИЧЕСКИЕ ТРАНСФОРМАЦИИ ПОЭТИЧЕСКИХ ФРАЗЕОЛОГИЗМОВ С КЛЮЧЕВЫМИ СЛОВАМИ ЧАША / ВИНО В ПОЭЗИИ ЯНИСА РАЙНИСА**

Работа посвящена исследованию поэтических фразеологизмов с ключевыми словами *чаша/вино* в поэтических произведениях Яниса Райниса.

В основе исследований лежит тезис о том, что литературная традиция предоставляет художнику утверждённый многовековой поэтической практикой *набор объектов уподобления*, то есть *готовые семантические модели* поэтических фразеологизмов, которые автор использует не только в первоначальном, но и трансформированном виде. Многочисленные лексико-грамматические и семантические трансформации устоявшихся поэтических формул помогают художнику слова *оживить* стандартный образ, выразить новое значение, выразить авторское отношение к реалиям окружающей действительности.

Структурно-семантическая модель – это инвариант по отношению к ряду поэтических фразеологизмов, составляющих определённую поэтическую парадигму. В роли семантического ядра, в котором содержится общее значение фразеологической модели, выступают *ключевые слова*, их роль очень весома как в формировании фразеологического значения, так и в создании образного потенциала.

Лексемы *чаша* и *вино* достаточно актуальны в роли ключевых слов в связи с тем, что обладают разветвлённой семантической структурой, а также большими возможностями для развития переносных значений.

Интерес к подобным выражениям не случаен. Они привлекают внимание как в силу своей традиционности в общеевропейской и мировой культуре, так и в силу незавершённости их анализа другими исследователями.

Само многообразие поэтических фразеологизмов, к которым традиционно относят метафоры, перифразы, сравнения, вызывает вопрос об их классификации и путях анализа. В предлагаемой работе за основу взят анализ *по образам* и *по денотатам*.

Исследования показали, что в произведениях Яниса Райниса наиболее частотными являются указанные поэтические фразеологизмы, обозначающие денотат *небо*, а также денотат *цветок*. Кроме того, подобные тропеические выражения достаточно часто обозначают чувства и переживания человека.

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## **РЕЛИГИОЗНО-ДУХОВНЫЙ КОД КУЛЬТУРЫ В ПАРЕМИЯХ РУССКОГО И ЛАТЫШСКОГО ЯЗЫКА**

Как в русском, так и в латышском языке большое количество фразеологических единиц, паремий имеют значение «смерть», что свидетельствует о важности категории «смерть» для носителей этих языков. Существенное количество паремий семантического поля «смерть» русского и латышского языка относятся к религиозно-духовному коду культуры, что и является предметом рассмотрения данной статьи. В работе сравнивается паремиологический материал двух языков, за основу берутся сборники пословиц и поговорок этих языков (а именно сборник В.И. Даля «Пословицы русского народа», сборник «Русские пословицы и поговорки» под редакцией В.П. Аникина, сборник Э. Кокаре «Латышские пословицы и поговорки»). Цель анализа – выявление общего и различного в восприятии понятия «смерть», исходя из данных паремиологии исследуемых языков.

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## PAR DAŽIEM ĀJO- UN ĒJO- CELMU VERBIEM NĪCGALES IZLOKSNĒ

Referātā aplūkoti aizgūtie verbi no slāvu valodām vienā no augšzemnieku dialekta dziļajām izloksnēm – Nīcgales izloksnē.

Katras valodas leksikā cilmes ziņā ietilpst dažādi leksikas slāņi: mantotie vārdi un aizgūtie vārdi. Pētot verbu Nīcgales izloksnē, tika konstatēts ievērojams daudzums slāvu cilmes verbu – gan adaptētu, gan tādu, kas tiek lietoti kādā vienā, sastingušā formā. Lai noskaidrotu šādu vārdu ienākšanas apstākļus izloksnē, sniegts neliels ieskats Nīcgales, resp., Latgales kultūrvēsturiskajā situācijā, kas ietekmējusi izloksnes attīstību. Jo valodā atspoguļojas tautas dzīve, tās vēsture – pasaules uzskati, nodarbošanās un sakari ar citām tautām.

Ikvienā valodā, kuru tautām ir bijuši ciešāki sakari, valodu kontaktu mijiedarbība izpaužas leksikas aizgūšanā. Tas ir likumsakarīgs process. Leksikas aizgūšanu rada gan sabiedrības vajadzības pēc jauniem izteiksmes līdzekļiem saziņas procesā, gan sociāli ekonomisko un kultūras sakaru intensitāte starp dažādām etniskām grupām. Latgales izloksnēs visvairāk ir aizgūvumu no slāvu valodām. Tā kā latviešu valoda un slāvu valodas ir ģenētiski saistītas, tas labvēlīgi ietekmējis aizgūvumu iekļaušanos un noturīgumu aizgūvējvalodas sistēmā.

Vairums aizgūto verbu pilnībā iekļāvušies Nīcgales izloksnes verbu sistēmā: tie ieguvuši latviešu valodai raksturīgo pirmās zilbes uzsvaru, izloksnei raksturīgās morfoloģiskās īpatnības: tiek konjugēti, var veidot divdabja formas u.tml.

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## ANTROPONĪMI RIEBIŅU NOVADA GALĒNU PAGASTĀ

Ievērojama ikvienas valodas vārdu krājuma daļa ir īpašvārdi. Personvārdi jeb antroponīmi (gr. *antrōpos* 'cilvēks' + *onoma* 'vārds') ir viens no īpašvārdu slāņiem, par kuru vienmēr ir bijusi plaša interese. Katras tautas antroponīmu veidošanās ir attīstījusies atbilstoši tās tradīcijām, vēstures notikumiem un personvārdu sistēmas darināšanas īpatnībām.

Mūsdienās latviešiem ir raksturīga divlocekļu antroponīmiskā sistēma: priekšvārds un uzvārds. Priekšvārdu vai nereti arī divus priekšvārdus iegūstam pirmajos dzīves mēnešos, bet uzvārds tiek mantots no paaudzes paaudzē.

Līdzās oficiālajai antroponīmiskajai sistēmai tiek lietoti neoficiālie antroponīmi.

Referātā tiks sniegts ieskats Riebiņu novada Galēnu pagasta antroponīmiskajā sistēmā. Galēnu pagastā ikdienā lieto gan oficiālos antroponīmus (priekšvārdus un uzvārdus), gan neoficiālos (hipokoristikas, iesaukas).

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## НАЗВАНИЯ РОССИЙСКИХ МУЗЫКАЛЬНЫХ ПОП-ГРУПП

The present paper (article) is a research of the titles of Russian music groups (based on the material from following sources – <http://www.baza-artistov.ru>, <http://www.proconcert.ru>, <http://infinitiv.ru>).

The titles of music groups are explored by the branch of the onomastics – ergonymy. Ergonymies are the section of onomastics, the study of names of institutions, corporations, business associations of people and enterprises.

Ergonomic lexis has its own peculiarity – it is changeable and may eventually disappear.

- 1) informative
- 2) nominal-intensifying
- 3) advertising
- 4) aesthetic

The goal of the study is to characterise ergonymies synchronically in relation to their structure and semantics.

To achieve the goal of the research, following objectives have been completed:

- Identification of the main types and formation methods of ergonymies.
- Analysis of the ergonomic material by the nature of the semantic basic elements material.
- Arranging titles of Russian pop-music groups in classification.

The titles of music groups is poorly explored layer of lexis in terms of onomastics. Scientific novelty of the research is in the fact that for the first time the ergonymies (titles of music groups) of Russia are presented and linguistically described as an object of the study.

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## **СУГГЕСТИВНЫЕ ОСОБЕННОСТИ ПОПУЛЯРНЫХ ПЕСЕННЫХ ТЕКСТОВ**

В статье рассматриваются основные лингвистические и экстралингвистические механизмы воздействия популярных песенных текстов на адресатов.

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## **ЯЗЫКОВАЯ ИГРА КАК СПОСОБ ТРАНСФОРМАЦИИ ПРЕЦЕДЕНТНЫХ ТЕКСТОВ В ИНТЕРНЕТ ДИСКУРСЕ**

Прецедентные тексты являются неотъемлемой частью культуры и играют чрезвычайно важную роль в культуре общества и, в частности, в создаваемых этим обществом литературных произведениях. За каждым прецедентным текстом стоит своя уникальная система ассоциаций, вызываемых им в сознании носителей языка.

Феномен прецедентности активно исследуется в современной лингвистике. Недостаточная изученность трансформированных прецедентных текстов в рамках интернет дискурса, и в частности языковой игры как основного способа их трансформации и определила актуальность данного исследования.

Целью данной работы является сопоставить и проанализировать прецедентные тексты и их трансформированные варианты, определив таким образом, как меняется мировоззрение человека, его отношение к происходящей действительности: какая система ценностей представлена в традиционной культуре, а какая – в современной.

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# CIVILTIESĪBAS

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# CIVIL LAW

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## CONCEPT OF THE SUSTAINABLE SOCIAL SECURITY SYSTEM IN THE CASE-LAW OF THE CONSTITUTIONAL COURT OF THE REPUBLIC OF LATVIA

Concept of the sustainable social security system in the case-law of the Constitutional Court of the Republic of Latvia

The first time when the Constitutional Court of the Republic of Latvia mentioned the concept of the sustainable social security system was in its judgment of 26 November 2009, case No 2009-08-01. The Constitutional Court stated that the right to social security includes the obligation of the state to establish a sustainable social security system. After that sustainable social security system and sustainable social budget is mentioned in about 10 judgments. In the paper author analyzes what content does the concept of the sustainable social security system have in the case-law of the Constitutional Court. Author concludes that this concept in the case-law of the Constitutional court is used in the broader sense covering not only the financial sustainability of the social security system.

Ilgstspējīgas sociālās aizsardzības sistēmas jēdziens Satversmes tiesas praksē

Satversmes tiesa pirmo reizi ilgstspējīgas sociālās aizsardzības sistēmas jēdzienu minēja 2009. gada 26.novembra spriedumā lietā Nr.2009-08-01, norādot, ka tiesības uz sociālo nodrošinājumu ietver sevī arī valsts pienākumu izveidot ilgstspējīgu sociālās aizsardzības sistēmu. Pēc tam sociālās aizsardzības sistēmas ilgstspēja vai sociālā budžeta ilgstspēja ir minēta vēl apmēram 10 spriedumos. Refrātā autore analizēs, ko Satversmes tiesa saprot ar ilgstspējīgas sociālās aizsardzības sistēmas konceptu. Referātā tiek secināts, ka šis jēdziens aptver ne tikai sociālās aizsardzības sistēmas finansiālo ilgstspēju, bet Satversmes tiesas praksē tiek lietots arī plašākā nozīmē.

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## A DELAY WITH THE REGISTRATION OF PROPERTY RIGHTS IN THE LAND REGISTER AND PROBLEMS RELATED TO IT

In practice, registration of the immovable property sometimes is being delayed which, first of all, causes problems for the new acquirer of the property. According to the first part of the Civil Law 994. Paragraph, only such persons shall be recognised to be the owners of immovable property, as are registered in the Land Register as such owners. A delay with the registration of an immovable property in the Land Register can lead to such situation that a note can be put on the immovable property in creditor's favour in regard to owner, as is registered in the Land Register and the new acquirer in the Land Register is rejected to corroborate the property which is obtained on the base of alienation contract. However, there is no specified date in the Civil Law during which the new owner should corroborate his rights in the Land Register. Thus all the records in the Land Register which are made after the conclusion of the alienation contract refers to the new owner's rights because if the deal is not corroborated, it doesn't lose its validity.

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## INSTITUTE OF MEDIATION

Institute of Mediation Mediation together with arbitration, ombudsman procedures and structured negotiation is deemed to be a type of alternative dispute resolution (ADR)<sup>1</sup>. But very essential features help to distinguish mediation from the other forms of ADR:

1. the voluntary nature, i.e., mediation is based on the voluntary participation of the parties;
2. the neutral intermediary's (the mediator) lack of adjudicatory competence, where he systematically facilitates communication between the parties with the aim of enabling the parties themselves to take responsibility for resolving their dispute;
3. the flexible and self-determined approach, in which all aspects of the conflict, independent of their legal relevance, may be considered.<sup>2</sup>

Hence, the goal of mediation is for the parties to reach a voluntary settlement which is then reduced to writing and becomes a contract<sup>3</sup>. In this process a neutral third party helps disputants to come to consensus on their own<sup>4</sup> by assisting the parties to find a resolution to their conflict in a sustainable and self-determined way<sup>5</sup>. Bernard Mayer, in his book "Beyond Neutrality", raises some useful observations about the nature of the mediation. The essence of mediation lies in four characteristics:

- Impartiality. Mediators do not see their job as trying to promote one person or group's interests at the expense of another.
- Process orientation. Mediators conduct a process to assist people in communication about the issues that are of concern to them.
- Problem solving. Mediators do not simply try to decide what the law dictates; they endeavor to help solve the problems that underlie the conflict. Often, but not always, this means taking an integrative or interest-based approach. – 'Integrative bargaining (also called "interest-based bargaining", "win-win bargaining") is a negotiation strategy in which parties collaborate to find a "win-win" solution to their dispute'.<sup>6</sup>
- Client focused. The mediator's goal is to attain a solution that the disputants will accept rather than to impose one on them. Usually this means focusing on client's interaction, communication, emotions, needs, and decision-making process.

According to author, mediation, although it is a rather young concept, is a well thought out instrument that in the presence of systematized rules on both European and national scales can significantly diversify and facilitate dispute resolution procedures.

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## HISTORICAL DEVELOPMENT OF ADOPTION

The article discusses the concept – adoption of children. The historical development of adoption starting with the ancient world and middle ages till nowadays is described. The peculiarities of the children adoption process in social life of different nations are analyzed. The importance of the Hague

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<sup>1</sup> According to Katherine V.W. Stone, a professor of law, UCLA School of Law, in American legal system also such mechanisms as fact-finding, mini-trial, summary Jury trials, Med-Arb, Small claim courts and rent – a judge are part of ADR. "Alternative Dispute Resolution. Encyclopedia of Legal History." Katherine V.W. Stone. Research Paper 04- 30. UCLA School of Law. p.1-2

<sup>2</sup> "Mediation in the European Union: An Introduction. Dr Felix Steffek LLM (Cambridge), June 2012 p. 1-2

<sup>3</sup> "Alternative Dispute Resolution. Encyclopedia of Legal History." Katherine V.W. Stone. Research Paper 04-30. UCLA School of Law. p.1

<sup>4</sup> "Mediation secrets for better business negotiations". Negotiation Special Report #7. p. 1. Harvard Law School. www.pon.harvard.edu. 16.10.13.

<sup>5</sup> "Mediation in the European Union: An Introduction. Dr Felix Steffek LLM (Cambridge), June 2012. p.2

<sup>6</sup> "Integrative or Interest-Based Bargaining", Brad Spangler. <http://www.beyondintractability.org/essay/interestbased-bargaining> 23.10.13.

Convention resolutions in the development of the children adoption process is explained. Detailed description and analysis of the historical development of adoption in Latvia is given starting with specificity of common law and formation of legislation with Latvia being within the Russian Empire up to the present development of adoption after Latvia gained its independence.

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## **HIPOTĒKAS IZVEIDOŠANĀS ROMIEŠU TIESĪBĀS**

Kontinentālās Eiropas tiesību sistēma, pie kuras pieder arī Latvijas tiesību sistēma, ir veidojusies vairāk nekā divu tūkstošu gadu laikā. Pamatu pamatos tai ir Senās Romas civiltiesības, kas bija ļoti attīstītas un vēl joprojām ir daudzu valstu, tajā skaitā Latvijas, civiltiesību pamatā. Arī hipotēkas institūts, kas ir viens no nozīmīgākajiem saistību nodrošinājuma veidiem mūsdienās, ir izveidojies Senajā Romā sintēzē ar grieķu terminoloģiju un pieredzi.

Hipotēkai ir ļoti liela nozīme civiltiesiskajā apgrozībā. Mūsdienās ir vairāki problēmu jautājumi saistībā ar hipotēkas izlietošanu, kas vai nu tiek apzināti radīti, vai nu ir izveidojušies nepārdomāta likumdošanas procesa rezultātā. Līdz ar to būtiski ir saprast, kas ir hipotēka un kāds ir tās mērķis. Lai atbildētu uz šiem jautājumiem, atbildes jāmeklē ne tikai mūsdienu normatīvajos aktos, tiesu praksē un tiesību doktrīnā, bet arī vēsturē.

Hipotēka kā ķīlas tiesību veids romiešu tiesībās neizveidojās uzreiz. Tas notika laika gaitā tiesību evolūcijas ceļā. Lielākā daļa, ko mēs zinām par romiešu tiesībām, nāk no juridisko materiālu kompilācijas, kas tika sagatavota 6. gs. pēc Bizantijas imperatora Justiāna pavēlēm. Teksti, ko viņš iekļāva šajā kompilācijā, bija rezultāts tūkstoš gadu nepārtrauktai tiesību attīstībai – apmēram no 500. g. p.m.ē. līdz 550. g. m.ē. Tieši šo tekstu analīze ļauj izdarīt secinājumus par hipotēkas rašanos, attīstību un mērķi.

Referātā autors atspoguļos hipotēkas rašanās gaitu, tās mērķi romiešu tiesībās, kā arī kopīgo un atšķirīgo, salīdzinot ar hipotēku mūsdienās.

Referāta mērķis ir pamatot hipotēkas mērķa nozīmīgumu, kas mūsdienās ir saglabājies tāds pats, kā Senajā Romā – nodrošināt saistību, lai no ieķīlātās lietas pārdošanas dzēstu kreditora prasījumu.

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## **NEPIECIEŠAMĪBA TIESAI IETVERT MOTĪVUS LĒMUMĀ PAR PRASĪBAS NODROŠINĀŠANU**

CPL izvirza pavisam necilu prasību, par kuru diemžēl tiesa/tiesnesis, pieņemot lēmumu, neviļus piemirst, t.i., lēmumam jāsaturs motivēti apsvērumi par to, kādus apstākļus tiesa/tiesnesis konstatē, kuri pieteikumā, ar kuru lūgts nodrošināt prasību, norādītie apstākļi apstiprināti ar pierādījumiem, par ko šie pierādījumi liecina un kādēļ var secināt, ka ir pietiekams pamats uzskatīt, ka tiesas sprieduma izpilde lietā būs neiespējama vai varētu kļūt apgrūtināta. CPL 230.panta pirmās daļas 5.punktā norādīts, ka lēmumā jānorāda lēmuma motīvi, un, lai arī nav atrunāts, kas izprotams ar lēmuma motīviem, tomēr, piemērojot analogiju, tiem tāpat kā sprieduma motīvu daļai jāsaturs no faktiskajiem apstākļiem, kas konstatēti, pamatojoties uz iesniegtajiem pierādījumiem, pierādījumu analīzes, kā arī konstatēto faktisko apstākļu juridiskās kvalifikācijas, ņemot vērā CPL 137.panta pirmās daļas 6.punktā noteikto. Pieteikumā par prasības nodrošināšanu norādāmi apstākļi, ar kuriem prasītājs pamato prasības nodrošināšanas nepieciešamību, līdz ar ko pieteikumam jāsaturs gan pienācīga argumentācija, gan pierādījumi atbilstoši CPL 93.pantam. Tādējādi, ņemot vērā minēto, secināms, ka pieteikumā par prasības nodrošināšanu nevar ietvert tikai un vienīgi apstākļus, nepievienojot attiecīgus pierādījumus. Tādējādi, vērtējot pieteikumu par prasības nodrošināšanu, nav pieļaujams, ka lēmumā ir tikai formāla atsauce uz to, kas ir/nav pamats prasības nodrošināšanai. Lēmumam jāsaturs tiesneša motīvi, no kuriem nepārprotami izrietētu, kā tiesnesis nonācis pie

konkrētiem secinājumiem, apmierinot vai noraidot pieteikumu par prasības nodrošināšanu. Turklāt jāatceras, ka prasības nodrošināšana un ar to saistīto jautājumu izlemšana ir civilprocesa būtiska sastāvdaļa, kurai tāpat kā civilprocesam kopumā jāatbilst Latvijas Republikas Satversmes 92.pantam. No CPL 9.panta pirmās daļas izriet, ka pusēm ir vienlīdzīgas tiesības, respektīvi, pušu procesuālo tiesību vienlīdzība ir tiesiskās vienlīdzības principa izpausme civilprocesā.

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## **ĒTIKAS PRINCIPI ISLĀMA FINANŠU SISTĒMĀ - KORPORATĪVĀ IDENTITĀTE**

Ētikai ir un ir bijusi liela nozīme Islāma finanšu sistēmas attīstībā un tās ietvaros esošo Islāma banku darbībā un attiecībās – gan savstarpējās, gan ar klientiem. Islāma finanšu iestādes tieši ētiku ir noteikušas, kā savu pamata kompetenci. Islāma finanšu iestādes noteikušas ētiku, kā pamatvērtību, tādējādi uzlabojot savstarpējo uzticību un definējot noteiktus principus, jo tieši Šariata (Shariah) likumi ir balstīti un to pamatā ir ētikas normas. Ētikas jautājumi un ētiskas uzņēmējdarbības principi, ir un vienmēr ir bijuši aktuāli tieši darījumu vidē, taču ir ļoti daudz uzņēmumu un uzņēmēju, kuri nav informēti vai negrib ievērot ētiskas uzņēmējdarbības principus. Ir izstrādātas un ieviestas daudzas teorijas, taču neētisku biznesa aktivitāšu skaits nav samazinājies un tas ir ievērojams. Šī darba mērķis ir salīdzināt vispārpieņemto ētikas teoriju saistībā ar Islāma ētiskas uzņēmējdarbības filozofiju un tās radītajām ētiska biznesa aktivitātēm. Darbā tiks sniegts biznesa ētikas paraugs saskaņā ar Islāma intelektuālo diskursu, kas izskaidros saistību starp ētiku un Islāma finanšu sistēmas darbību, kā arī tiks apspriesti kritēriji, kas nepieciešami ētiskai finanšu iestāžu darbībai. Šī pētījuma mērķis ir veicināt pašreizējo zināšanu par ētiskas uzņēmējdarbības nozīmi un izpratni, kā arī sniegt savus atzinumus par nepieciešamību biznesa ētikas turpmākai izpētei un ieviešanai. Šis pētījuma uzdevums ir novērst trūkumus sabiedrības informētībā par to, ka ētika var būt korporatīvā identitāte un tieši – Islāma finanšu iestādēs.

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## **VIOLENCE IN FAMILY - STILL A TOPICAL SOCIETY'S AND NATION'S PROBLEM**

Violence in family is one of the urgent and common problems. Not only women and but also children suffer violence mainly in family. Welfare ministry informed that the results of the survey "Violence against women: an EU-wide survey" carried out by European Union Agency for Fundamental Rights, show that every year in Latvia more than 100 women suffer violence and level of violence is higher than in Europe. Of course the actual extent of this problem could be broader than it is shown in the official statistical data. It demands a solution of the problem in the society in general including the area of legislation. Currently changes have been established in Civil Procedure Law, Law on Police, Protection of the Rights of the Child Law, Criminal Law and Law on Orphan's Court which provide a person's protection from the violence within the Civil Procedure. However, in the society still exist myths about the violence that complicate the struggle against it. The problem continues to exist and violence leads to injuries and even death. It is important to remember that the consequences of violence are irreversible, especially for children, because the experience in childhood can reflect in the long run and drive a child to that position of violent offender.



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## **VALSTS UN PAŠVALDĪBU SADARBĪBAS AR VECĀKIEM PROBLEMĀTIKA BĒRNU TIESĪBU AIZSARDZĪBAS KONTEKSTĀ**

Latvijā arvien biežāk masu saziņas līdzekļos redzama informācija par bērnu tiesību un interešu pārkāpumiem, kurus izdara bērnu vecāki.

Savukārt, nacionālās tiesību normas, kā arī starptautiskās tiesību normas aizsargā bērnu tiesības un intereses, piešķirot primāro uzmanību bērnu tiesību aizsardzības jautājumiem salīdzinājumā ar pārējiem sabiedriskās dzīves jautājumiem.

Latvijā bērnu tiesību pārkāpumi bieži izpaužas, kā vecāku vardarbība pret bērnu, vecāku nevēlēšanās rūpēties par bērniem, atteikšanās no tiem.

Sevišķi aktuāls jautājums Latvijā pastāv par bērna tiesībām augt pilnvērtīgā ģimenē, tiek risināti bērnu tiesību jautājumi gadījumos, kad bērna vecāki ir atteikušies no bērna vai ar valsts un pašvaldību iestāžu starpniecību bērns ir izņemts no ģimenes.

Latvijā bērnu tiesību aizsardzību jautājumus risina vairākas valsts un pašvaldību institūcijas, kuru darbības tiešie pienākumi irraudzīties lai tiktu ievērotas bērna tiesības un intereses, gan arī pastāv tādas institūcijas, kuru pienākumos ietilpst atsevišķas funkcijas šajos jautājumos. Sevišķi liela loma bērnu tiesību aizsardzībā ir Valsts bērnu tiesību aizsardzības inspekcijai, kā arī bāriņtiesai. Šīm institūcijām ar tiesību aktiem noteikti konkrēti pienākumi bērnu tiesību aizsardzības nodrošināšanai, kā arī tiesības bērna vecākiem noteikt atsevišķas sankcijas par pienācīgu nerūpēšanos par bērnu, tajā skaitā vardarbību pret to.

Sevišķa loma bērnu tiesību aizsardzībā atsevišķos jautājumos ir policijas iestādēm (Valsts un pašvaldības policijai), kā arī sociālajam dienestam.

Liela loma un atbildība bērnu tiesību un interešu ievērošanā ir izglītības iestādēm, kurām pienākums veikt darbību izglītības jomā, bet arī kompetences robežās reaģēt uz gadījumiem, kad tiek pārkāptas bērna tiesības ne tikai no pārējās sabiedrības daļas, bet arī tieši no vecākiem.

tādēļ, autors uzskata, ka svarīgi izpētīt valsts un pašvaldību iestāžu kompetenci, to sadarbību bērnu tiesību aizsardzības jomā, bērnu un vecāku tiesiskajās attiecībās.

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## **REGULATORY FRAMEWORK PARTNERSHIP IN ESTONIA AND POSSIBLE CHANGES IN LATVIA**

Rights to respect for private life, housing, correspondence and “family life”, as well as compliance of family law with social reality, improvement of demographic situation, the necessity for sex education for children, therefore, constructive and cumulative actions from the side of legislators are required with an aim to modernise family law regulations in conformity to current needs of the society.

It refers to both Latvia and other countries that have not yet adopted regulatory framework for the union outside marriage, i.e., partnership of opposite sex couples has not been regulated by law, thus, union outside marriage between opposite-sex individuals who establish a family has not been legally recognised. Moreover, the issue on legalisation of same-sex relationships within national legal provisions is even more debatable.

In conformity with judicature of the European Court of Human Rights (hereinafter – ECHR), a same-sex couple relationships may also be included in the scope of “family life”, however, in conformity with the Convention for the Protection of Human Rights and Fundamental Freedoms (hereinafter – the Convention), no formal obligations to allow same-sex marriage are imposed on countries. Thus, rights to inviolability of family life are not absolute – they can be restricted with an aim to protect the interests of country’s economic well-being, public order, safety, culture etc., unless the restriction is

proportionate to the goal to be achieved. According to the author's views, it is related to the implementation of same-sex institution in national legal provisions.

To legalise same-sex partnership institution in Latvia, there would be required to amend a list of national regulatory enactments. Primarily, legalisation of same-sex relationship institution would contradict Article 110 of the Constitution. It should be noted that sexual orientation is listed among discriminatory criteria. Namely, the second sentence of Article 91 of the Constitution defines the principle for ban on discrimination: All human beings in Latvia shall be equal before the law and the courts. Human rights shall be realised without discrimination of any kind. As it can be concluded from the aforementioned, partnership between individuals of non-traditional sexual orientation cannot be legally banned. At the same time, there are no legal instruments for these couples to apply legal provisions.

As Article 10 of the Treaty on the Functioning of the European Union (hereinafter - the Union) stipulates, in defining and implementing its policies and activities, the Union shall aim to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation.

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## **COURT'S, ARBITRAL AND NOTARY DECISIONS AND ACTS UNDER INHERITANCE BY CONTRACT SITUATION: RECOGNIZANCE AND EXECUTION ISSUES**

Acts of the judiciary, which include judgments and decisions of courts and notary acts, appear as the basis for the execution of contracts and equated institutions of the inheritance by contract within the territories of the national states. Being the acts of public and private branches of the judiciary and intended for creating "In rem" law and the law of obligations, acts of the judiciary required for acceptance and recognition within the territory of a state. By this moment the main form of recognition of the legality and admissibility of these decisions is the process of issuing by a competent notary certificate of inheritance. The problem of issuance of the certificate of inheritance is quite important - cases under the situation of the inheritance by contract are allowed for resolving simultaneously in state courts, where judges' qualification authorized and defined by law and in arbitral courts. On the contrary, judges' qualification in arbitral courts not regulated by legislation of a particular state. Because of this circumstance, arbitration courts judges and sometimes judges of the state courts cannot take into account the facts of the concrete case to decide this objectively and as a sequence notary confronts with the necessity to refuse the party of the contract to issue a certificate of inheritance. The purpose of this article is to demonstrate the complexity of the decisions of cases originating from the inheritance by contract situations and problematic aspects of their performance.

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# KRIMINĀLTIESĪBAS UN POLICIJAS TIESĪBAS

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## CRIMINAL LAW AND POLICE LAW

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### KRIMINĀLPROCESA MĒRĶIS UN KRIMINĀLTIESVEDĪBAS SISTĒMAS KVALITĀTE

Pēdējā laikā, it īpaši saistībā ar Zolitūdes traģēdijas izmeklēšanas lietu izskanēja vairāku kompetento amatpersonu un speciālistu publiski viedokļi saistībā ar krimināltiesvedības kvalitāti, krimināltiesvedības procesa neefektīvu un ilgstošu norisi. Kādi tad ir kriminālprocesa mērķi, kādus būtu jāsasniedz izmeklējot ikvienu noziedzīgu nodarījumu? Kaut gan tieši Kriminālprocesa likums kriminālprocesa mērķi nedefinē, tomēr minēta likuma 1.pants reglamentē paša Kriminālprocesa likuma mērķi. Kriminālprocesa likuma grozījumi, kas stājas spēkā ar 2009. gada 1. jūliju, precizēja Kriminālprocesa likuma mērķi un turpmāk tas tiek attiecināts ne tikai uz izmeklēšanas, kriminālvajāšanas un krimināllietu iztiesāšanas kārtību, bet gan uz visu kriminālprocesu (ieskaitot noziedzīga nodarījuma konstatāciju KPL kārtībā kriminālprocesu veicošajā iestādē līdz lēmuma pieņemšanai par kriminālprocesa uzsākšanu, kā arī ieskaitot laiku no 1) kriminālprocesa nodošanas no izmeklēšanas iestādes ar ierosinājumu prokuroram uzsākt kriminālvajāšanu līdz kriminālvajāšanas uzsākšanai un 2) prokurora lēmuma par lietas nodošanu tiesai līdz lietas sagatavošanas iztiesāšanai). Raksta mērķis ir izpētīt Kriminālprocesa likuma 1.pantā nostiprināta likuma mērķa saturu un tā atbilstību kriminālprocesa mērķim, skatot mērķa kategoriju caur krimināltiesvedības sistēmas kvalitātes prizmu. Rakstā sniegts ieskats krimināltiesvedības sistēmas struktūrā, aplūkota krimināltiesvedības sistēmas kvalitātes izpratne. Autore secina, ka termins „*kriminālprocesa mērķis*” nav tāpatīgs terminam „*Kriminālprocesa likuma mērķis*”. Jāatzīmē, kā kriminālprocesa mērķa izpratnei, tā arī krimināltiesvedības sistēmas kvalitātes izpratnei gan teorijā, gan krimināltiesvedības iestāžu praktiskajā darbībā tiek veltīta nepietiekama uzmanība. Raksta noslēgumā autore piedāvā identificēto problēmu konkrētus risinājumus.

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### PECULIARITIES OF THE CRIMINAL LAW DEVELOPMENT METHODOLOGY AND ITS CURRENT PROBLEMS

Despite the major reform recently performed, the issue regarding amendments to the Criminal Law and the necessity of its editing is still topical in the latest scientific researches. A similar tendency has been observed in the other fields of law, where it is proposed to amend almost every existing regulatory enactment. This process of active revising the legislative acts, in particular, the rapid increase in the number of amendments, have led to the initiative at the government level to develop a new legislative act, which, in the future, could help to reduce the number and volume of amendments of other regulatory enactments.

The process of the revisions and amendments of the law has a number of reasons that could be explored and analyzed separately, or in their causal relationship. Obviously, the regulation and protection of the vital public and social interests prevail in the development of the legal enactments; however, the methodology of the law development should not be forgotten.

From the general point of view, the methodology is a system of approaches and principles for the design and organisation of theoretical and practical actions, as well as the doctrine on this system. In

the framework of criminal law, the methodology has an exceptional significance and impact both for the assessment of the criminal offence and for the punishment determination process. The core of the methodology is strongly related with social and political processes in the country, with the level of economic development and welfare, and, of course, with the legal doctrine chosen. Therefore, the paper is focused on the peculiarities of the construction of the norms of the Criminal Law, nuances of their interpretation, and importance of the doctrine.

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## **INOVATĪVAS PIEEJAS JURIDISKĀS PALĪDZĪBAS SNIEGŠANĀ KRIMINĀLTIESĪBĀS**

Juridiskās palīdzības sniegšana krimināltiesībās var tikt īstenota dažādos veidos, izmantojot inovatīvas pieejas. Pētījumā tiek aplūkotas tehnoloģiju radītās tendences, analizējot kā tās ietekmē juridiskās palīdzības saturu un kvalitāti.

Vērtējot mūsdienu tendences tehnoloģiju attīstības un ieviešanas jomā, nākas secināt, ka izmaiņas ir vērojamas arī juridiskās palīdzības sniegšanā. Juristi jaunās tehnoloģijas arvien plašāk sāk izmantot darbam ar klientiem. Taču neskaidrs ir jautājums par to, kādas sekas jauno tehnoloģiju izmantošana atstāj uz vērtībām, kurām būtu jāpaliek nemainīgām, piemēram, ētiskie kritēriji, likuma varas autoritāte, kā arī profesionālisms un juridiskās izglītības kvalitāte.

Iespēja visplašākajā mērā īstenot savas tiesības mūsdienās ir kļuvusi par dienas kārtības jautājumu valstu politiskajā dzīvē. Globālās advokātu firmas „Eversheds” pētījums atklāj, ka jauno juristu paaudze saskata iespēju piesaistīt jaunākās tehnoloģijas, lai pārveidotu daudzas novecojušas darba metodes. Inovatīvas komunikācijas iespējas piedāvā ātri un efektīvi panākt juridiskās palīdzības pakalpojuma nodrošinājumu praktiski jebkuros apstākļos un neatkarīgi no atrašanās vietas. Bieži vien komunikācija starp juridiskās palīdzības sniedzēju un tās pieprasītāju (klientu) notiek virtuālajā vidē. Tāpēc ir bažas par to, vai virtuālā vide netieši, bet tomēr mazina juridiskās palīdzības kvalitāti. Bez tam, iespēja saņemt virtuālu juridisko palīdzību var tikt orientēta negodprātīgiem mērķiem un tādējādi zūd ētiskās vērtības un likuma varas autoritāte.

Pētījuma empirisko datu bāzi veido strukturētās intervijas ar Latgales reģiona juridiskās palīdzības sniedzējiem. Var konstatēt, ka arvien plašāk tiek izmantotas jaunākās tehnoloģijas darbam ar klientiem, kas ietekmē juridiskās palīdzības saturu, bet veicina tās pieejamību.

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## **FUTBOLA FANI KĀ NEFORMĀLĀ LĪDZJUTĒJU APVIENĪBA AR KRIMINOĢĒNĀM IZPAUSMĒM LATVIJĀ UN ĀRVALSTIS**

Neformālo futbola fanu apvienību izpēte no kriminoloģiskā viedokļa ir pietiekami perspektīvs izpētes objekts, jo, pirmkārt, minētais pētījums radīs iespēju apzināties futbola fanātisma būtību un tā kriminogēnās izpausmes personās, kam raksturīgas futbola fanātisma pazīmes. Otrkārt, pētījums var būt piemērots praksē, piemēram, to var izmantot drošības iestādes konfliktu novēršanai, kā arī futbola mačū organizatori, lai attiecīgajos mačos nodrošinātu maksimālo drošības līmeni atbilstoši starptautiskajiem standartiem, ņemot vērā futbola fanu kustības īpatnības.

Referāta mērķis ir pētīt futbola fanu neformālās apvienības un to kriminogēnās izpausmes Latvijā un ārvalstīs. Lai detalizētāk izpētīt futbola fanātisma problēmu, darbā iekļauta dažādu autoru futbola fanu grupu klasifikācija, jo ir būtiski noteikt fanu kustību struktūru. Zināms, ka līdzjuteju un cilvēku, kas nav saistīti ar futbolu, starpā eksistē stereotipi attiecībā uz futbola faniem, līdz ar to fanus sauc par „agresīvām grupām”, „neprātīgo cilvēku baru”, „nekontrolējamiem skandalīstiem”, „debošīriem”, „huligāņiem”. Bieži vien fani ir informēti par šādu stereotipu eksistenci un cenšas tiem atbilst.

Papildus darbā pētīti noziedzīgie nodarījumi, kas izdarīti ar futbola fanu grupu līdzdalību Latvijā un ārvalstīs – to motīvi un sekas. Kopumā darbā tiek analizēta literatūra, kas veltīta neformālo futbola fanu grupējumu izpētei, kā arī sniegts autora personiskais viedoklis par dažiem sociāli-psiholoģiskiem fenomeniem, kas ietekmē futbola fanu uzvedību.

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## **LATVIJAS SODU IZPILĒS KODEKSA NORMU UN ANO IESLODZĪTO REŽĪMA MINIMĀLO STANDARTNOTEIKUMU NORMU KORELĀCIJA**

Lai nodrošinātu efektīvu brīvības atņemšanas soda izpildi, ir būtiski ievērot notiesāto personu vispārējās cilvēktiesības, izturoties pret notiesātajiem ar cieņu, nodrošinot ieslodzījuma vietu personāla profesionālu attieksmi un atbilstošus brīvības atņemšanas soda izpildes apstākļus notiesāto personu režīma un resocializācijas procesa nodrošināšanai. Brīvības atņemšanas soda izpildes laikā jāveicina notiesāto personu pašcieņas saglabāšana, veicinot viņos pozitīvu attieksmi, un atbildības sajūtu, tādejādi sagatavojot viņus likumpaklausīgai dzīvei sabiedrībā.

Autors, veicot Eiropas Padomes Ministru komitejas Ieteikumu Rekomendācijas Nr. R(87)3 Eiropas brīvības atņemšanas iestāžu noteikumu, Eiropas ieslodzīto režīma minimālo Standartnoteikumu un Latvijas Soduzpildes kodeksa tiesību normu analīzi, nonāk pie secinājuma, ka ir vērojama atsevišķu Latvijas Soduzpildes kodeksā iekļauto tiesību normu neatbilstība starptautiskajiem standartiem un normām.

Pamatojoties uz iepriekš minēto, autors iesaka izdarīt virkni grozījumu Latvijas Soduzpildes kodeksā, lai kodeksa normas atbilstu gan Eiropas ieslodzīto režīma minimālo Standartnoteikumu prasībām, gan vispārpieņemtajiem cilvēktiesību principiem, tādejādi nodrošinot notiesāto personu individuālo tiesību aizsardzību.

Autors izsaka pieņēmumu, ka pētījuma ietvaros atklātās neatbilstības un problēmas, kā arī piedāvātie risinājumi dos nozīmīgu pienesumu soda izpildes tiesību attīstībai Latvijā. Izmantojot pētījumā izteiktās jaunās zinātniskās atziņas, tiks nodrošināta iespēja pilnveidot brīvības atņemšanas soda izpildes tiesisko regulējumu.

**Nikolajs Jefimovs**

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## **MEDIĀCIJA KĀ KRIMINĀLTIESISKO KONFLIKTU NOREGULĒŠANAS LĪDZEKLIS: PIEMĒROŠANAS IZPLATĪBA LATVIJĀ**

Mediācija kā konfliktu noregulēšanas līdzeklis tiek plaši izmantota privāto tiesību jomā. 2014. gadā ir pieņemts Mediācijas likums, kas nostiprina minēta institūta juridisko bāzi un pamatprasības tās izmantošanai. Zinātnieku aprindās arī notiek plašas diskusijas par mediācijas izmantošanas priekšrocībām civiltiesisko konfliktu noregulēšanai. Tajā pašā laikā par mediācijas izmantošanu krimināltiesību jomā nav pieņemts plaši diskutēt. Vēl jo vairāk, nav zināms mediācijas izmantošanas reālais īmenis krimināltiesisko konfliktu noregulēšanas jomā. Autors, izmantojot anketēšanas un aptaujas metodes, ir apkopojis speciālistu viedokļus par mediācijas izmantošanas izplatību publisko tiesību jomā un izvirzīja savus pieņēmumus par mediācijas izmantošanas patieso līmeni.

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## **ANALYSIS OF LIFELONG IMPRISONMENT IN LATVIA**

The problem of state power in relation to methods of punishment for offenders on community adopted rules violations has always been important. Mankind is developing, relations in society are becoming increasingly complex in content, but the state punitive function always reflect the response capacity to the committed crime.

Topic "Analysis of lifelong imprisonment in Latvia" had been chosen for the conference because of my consideration of criminal law as extremely important and not enough researched theme in Latvia. This topic is particularly acute by the fact that many national laws and regulations, including Latvian, provide an opportunity for lifelong prisoners to get free from prison before the term. The offender, who cruelly murdered other people, including children, could relax and walk beside us, so it is necessary to find out now whether we are in such a society will be able to feel safe.

**Baiba Hercmane**

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## **PROBLEMS OF INTERPRETATION AND PROVING OF THE CRIMINAL LAW FRAMEWORK OF CRIMINAL OFFENCE AGAINST MORALS AND SEXUAL INVIOLABILITY DURING INVESTIGATION**

On 14 June 2014 amendments to the Criminal Law came into force in relation to criminal law framework of criminal offence against morals and sexual inviolability. The need for amendments is based on the provisions proposed by the Directive 2011/93/EU of the European Parliament and Council on combating sexual abuse and sexual exploitation of children, and child pornography, replacing the Council Framework - Decision 2004/68/JHA regarding minimum standards in relation to compositions and sanctions of such crimes relating to sexual abuse committed against children.

The directive recognizes, inter alia, the involvement in sexual activities with a child by forcing them or misusing the recognised trust, authority or influence on the child as punishable. Similarly, also the Convention of the European Council of 11 May 2011 on preventing and combating violence against women and domestic violence emphasises that any sexual activity, which is committed without consent also in the cases, when the victim of violence has not showed physical resistance is punishable, therefore Section 159 (Rape) and Section 160 (Forcible Sexual Assault ) have been supplemented by including in the concept the criminally punishable act for rape or sexual assault, which has been committed, when using trust, authority or any other influence on the victim. Due to non-existing practice there are problems with the interpretation of particular terms of the problem and proving the composition of the criminal offence.

***Ilze Sokolovska***

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## **INNOVATIVE SOLUTIONS FOR FURTHER DEVELOPMENT OF THE CRIMINAL INVESTIGATION**

On the basis of the normative regulation, currently available in the Republic of Latvia, the measures of criminal investigation were included only in the Investigatory Operations Law (effective as of 13.01.1994, hereinafter – IOL), although the author believes that they indisputably perform the support function for measures provided by the Criminal Procedure Law (effective as of 01.10.2005). The IOL is based on the protection of the information source, the law imposes an obligation to ensure for the subject of the operational activities the security of the identity of the information source and protection mechanisms for tactical techniques and methods for obtaining information. By their nature the measures of criminal investigation are not limited only to measures provided by the IOL and quite often do not comply with the purpose stipulated by the IOL, therefore the author believes that it is necessary to rework the IOL, recognize it as null and void and issue a new law instead of that, where only the legal provisions, regulating the measures of narrow range to be performed in a special form, shall be included, thus changing the purpose, methods and principles of the operational activities.

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## **PECULIARITIES OF INFANTICIDE CLASSIFICATION**

The aim of the research is to explore the Peculiarities of Infanticide Classification. In the report the following things were examined: the general definition of classification, classification peculiarities of infanticide committed by its mother and peculiarities of murder of a helpless person (since an infant is classified as a helpless person).

The main conclusions are the following: in most cases infanticide can be classified by two articles of the Criminal Law: Article 119 or the second paragraph of Article 117. To classify infanticide in compliance with Article 119 it is necessary to establish a number of circumstances: the victim is a newborn child up to one day old; the murder was committed by its mother during or immediately after the birth, and the mother was acting under the influence of physical and mental condition caused by the childbirth. This condition is to be established applying comprehensive expertise. It is very important that there were no intent to kill. Otherwise, the crime should be classified in accordance with the second paragraph of Article 117 of the Criminal Law.

Classifying infanticide in accordance with the second paragraph of Article 117 of the Criminal Law it is necessary to keep in mind that perpetrator's awareness of killing an infant is mandatory. It is also unacceptable to classify the crime by items 2 and 12 simultaneously since it is necessary to distinguish between the murder of an infant and the murder of a juvenile.

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## **PROBLEMATIC ASPECTS OF THE STATUS OF THE VICTIM - A NATURAL PERSON IN THE CRIMINAL PROCEEDING**

Section 22 of the Criminal Procedure Law of the Republic of Latvia (hereinafter referred to as - the CPL) guarantees for any person upon whom harm has been inflicted by a criminal offence, taking into account the moral injury, physical suffering, and financial loss thereof, the procedural opportunities for the requesting and receipt of moral and financial compensation. Such a compensation is provided by the criminal proceeding only for those persons, who have been recognized in a status of the victim. Accordingly, Section 95, Paragraph three of the CPL excludes a person, who does not comply with the criterion, specified by the same paragraph, for a status of the potential victim, while who, at the same time, has had a cohabitation and joint household with the deceased.

Such a conclusion arise doubts regarding the possibility to comply with the legal provisions covered by Section 22 of the CPL.

In this relation also the circumstance that several other sections of the CPL, such as Section 12, Section 51 and other sections of the CPL, provide such persons only, of course, in other relations, is to be assessed.

In the above specified case also the issue regarding the compliance of the CPL with the Directive No. 2012/29/EU of the European Parliament and Council establishing minimum standards on the rights, support and protection of victims of crime is debatable.

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## **JUVENĀLĀ TIESA LATVIJĀ - UTOPIJA, VAI NEIZBĒGAMA PERSPEKTĪVA**

Nepilngadīgo noziedzība aizvien tiek uzskatīta par aktuālu sabiedrības problēmu, vēl jo vairāk tamdēļ, ka nepilngadīgie veido jauno kriminālās pasaules paaudzi. Respektīvi, dabiskā atražošanas procesa ietvaros, tieši jaunieši ir tie, kam ir lemts papildināt cietumu iemītnieku rindas. Vismaz daļēji atrisinot nepilngadīgo noziedzības, un, it sevišķi, jauniešu recidīvās noziedzības problēmas, ir iespējams būtiski samazināt penitenciāro slogu valsts budžetam un sociālo dezintegrāciju. Vairāku ārvalstu tiesību sistēmās arvien lielāku popularitāti šajā virzienā gūst juvenālās tiesas, kuru pamatmērķis ir speciālu pieeju izmantošana dažādu valsts piespiedu līdzekļu pielietošanā nepilngadīgajiem. Austrumeiropā, tai skaitā arī Latvijā, attieksme pret šo tiesību institūtu ir neviennozīmīga - no klajas noliegšanas līdz dedzīgam atbalstam. Pētījuma autori analizē legālos un racionālos apsvērumus, uz kuriem balstās dažādu koncepciju autori Latvijā un ārvalstīs, kā arī piedāvā savu skatījumu uz pētāmo problēmu.



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## **POLICIJAS UN SABIEDRĪBAS MIJIEDARBĪBA**

Ir jāpiekrīt, ka policija un sabiedrība atrodas nepārtrauktā mijiedarbībā. Policijas darbam ir zināma nozīme, piemēram, sociālo apstākļu uzlabošanā. Ja kādā vietā uz ielām vairs neredz nelegālu tirdzniecību ar akcīzes precēm, kautiņus un agresīvas personas, cilvēki, kas tur dzīvo, parasti jūt pamudinājumu dzīvot kārtīgāk. Tomēr jāatzīst, ka pārveidot sabiedrību nav nevienas policijas spēkos. Vai varam iedomāties sabiedrību, kuras locekļiem ir tik dziļa cieņa pret likumu, ka viņiem nav vajadzīga policija? Vai spējam iztēloties pasauli, kur cilvēkiem tik ļoti rūp citu labklājība, ka viņi vienmēr ir gatavi piedāvāt savu palīdzību un tāpēc nevienam nav nepieciešami policijas pakalpojumi? Sabiedrība ir radījusi likumus un tiesībsargājošās iestādes, lai sevi aizstāvētu. Sabiedrība ir policija, un policija ir sabiedrība. Kāda ir to mijiedarbība, un vai tā ir efektīva?

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## **PHENOMINALITY OF GENESIS OF DEFINABLE PAPILLAE PATTERN PRINTS ON HUMAN SKIN**

The research of the author is dedicated to the phenominality of definable papillae pattern prints on human skin. In the framework of the research the author has analysed and has made a series of experiments to discover the phenominality of the formation mechanism of papillae pattern prints. To achieve this goal, the following objectives have been set: to study and analyse the human skin structure of prints on different parts of the body; to analyse and examine the formation mechanism of papillae pattern prints on human skin; to analyse conditions of the formation of papillae pattern prints on human skin; to examine and determine the factors affecting the formation mechanism of papillae pattern prints on human skin; to analyse the researches and studies of foreign researchers; to analyse a series of experiments made by the author. In conclusion, the author analyses and summarizes the results of the research, as well as expresses an opinion and draws conclusions.

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## **COGNITIVE CRITERIA OF THE PUBLIC ORDER AND SAFETY**

In the Declaration of the Cabinet lead by the Prime Minister Laimdota Straujuma about the intended activity is mentioned significant and fundamental information: We will make effective public order maintenance model in the state. We will realize unitary crime prevention programme in the state. The Ministry of the Interior also in its performance strategy for the years 2014–2016 has determined crime combating, public order and safety as prior matters which in modern understanding mean that research of the public order and safety concept and analysis are outstanding and significant. The aim of the article is to analyze public policy and security cognitive criteria/indicators. The theoretical analysis of the public order and safety concept is mostly concerned with studying the criteria for the identification and identifying the causes of threats. To identify the most significant organizational problems of ensuring the public order and security and to develop practical steps to reduce the threat expression and tensions in society the concept of theoretical study and analysis must be deep enough.

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## **STRENGTHENING COOPERATION OF POLICE SERVICES INVOLVED IN FIGHTING AGAINST FOOTBALL HOOLIGANISM**

Brutality, intolerance, racism, Anti-Semitism, cruelty, hate, malice, fury, Nazism and nationalism those are all the feelings and behaviours which are covered with the iceberg`s top visualized as football hooliganism.

The football hooligan (a.k.a. ultras) union is a place to legally explode, to push out all the positive, mostly negative emotions and energy and to earn adrenaline. Ultras – their brotherhood, union they belong to and feel respected. They arrange the bloody meetings with enemy hooligan groups for competing according to agreed fighting rules, there is an agreement of what kind of weapons (wooden sticks, metal poles, knives, chains, baseball bats etc.) can be used.

The strengthening of cooperation of police services involved in fighting against football hooliganism is a huge challenge for police within the European Union, because the authorities must have the following things: common rules – Directives or other legal acts; common guidelines how to collaborate more effectively; authorities must have common rules, get to know legislation of other participant countries, they must have common plans of response to the accidents; they have to participate in common trainings which would be led by trainers from both sides and involve the observers from most successful countries with experience of such cooperation.

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## **BEHAVIOUR OF THE EMPLOYEE OF POLICE, UPON ESTABLISHING DOMESTIC VIOLENCE, THE LEGAL FRAMEWORK AND PROBLEMS RELATED TO THAT**

Domestic violence is one of the most common types of violence, which is proved by studies performed both, in Latvia as well as Europe. The response to violence may be various – providing psychological or social support to the victim, providing temporary protection against violence for the person in harm, which at the same time is expressed also as a preventive forced mean in relation to the person, who has caused threats for violence or has caused consequences of violence, as well as initiating the criminal proceeding or administrative record-keeping in the case, when information is received regarding the possible fact of violence. However, it is to be concluded that the problematic exists both, when resolving the issue regarding the application of a temporary protection as well as investigating the criminal proceedings, which have been initiated regarding the fact of domestic violence. Regulatory enactments of Latvia still have not defined a common understanding of the term “family”, which is currently replaced with the term “domestic violence”. There are no methodology developed on how the employees of law enforcement institutions shall recognize violence. The purpose of the temporary protection against violence is to prevent or cease domestic violence, however, upon resolving the issue regarding the application of such preventive forced measure, the competent persons fail to draw the sufficient attention to the fact whether the criminal proceeding will and may be initiated regarding the particular fact of violence, thus failing to ensure the acquisition of evidence full of value.

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## **HUMAN RIGHTS PROPORTIONALITY OF RESTRICTIONS TO THE LEGITIMATE AIM OF OPERATIONAL WORK**

The principle of proportionality implies that the potential public benefits, the restriction must be real and greater than individual rights, freedoms and interests of the prescribed limits. Proportional limit should be adequate to meet the objective and socially necessary.

In practice, most problems and disputes arising from matters relating to human limits – on public rights in the public interest to limit individual rights. Some human rights are not subject to any restrictions. They are, for example, the right to life, the right to one's physical integrity, the prohibition of slavery and these are the so-called absolute human rights, which should never be restricted. However, most human rights are reasonably limited in order to harmonize human rights of many individuals so that they do not collide as much as possible, so most human rights are not "absolute". They may be restricted.

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## **KVARTĀRVIDES PĒTĪJUMI**

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## **RESEARCHES OF QUATERNARY ENVIRONMENT**

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## **MORPHOLOGY AND INTERNAL STRUCTURE OF RIVER TERRACES IN THE UPPER DAUGAVA SPILLWAY VALLEY: A CASE STUDY FROM THE SKERŠKĀNU MEANDER**

The study focused on morphology and internal structure of river terraces was performed in Skerškānu meander that is the most eastward part of the Upper Daugava spillway valley within its stretch between Krāslava town and Krauja village. The spillway valley was carved in the lowermost part of the Upper Daugava depression by glacial meltwater streams towards the end of last Weichselian glaciation and subsequently modified by fluvial processes in the Holocene. In this stretch, the valley is terraced. According to data given in a scientific literature by different authors, the number of terraces in the spillway valley varies from five to eight terraces. Field surveys performed with the application of total station and high-precision GPS, as well as desk-based studies of high resolution DEM indicate that in Skerškānu meander seven terrace-like surfaces can be recognized at the hypsometric levels with heights 103.8–104 m, 107.3–108.5 m, 109.5–110.5 m, 114–115.8 m, 119.3–122.5 m, 125.6–133.2 m and 137.8–141.2 m respectively. Only the terraces I and II can be easily identified while the upper terraces do not have explicit edges and occur as segments of remnants with various kettle holes on their surface. The terraces I to IV are fluvial, but the upper ones are of glaciofluvial origin. Only the youngest terrace I in this stretch of the Daugava River valley is aggradational while others are degradational. The results of geological studies of the internal structure of two uppermost terraces reveal that these landforms are kame terraces. It is likely that they formed due to the accumulation of glaciofluvial sediments when glacial meltwater flowed along the lateral slope of the Upper Daugava depression. The vertical cross-section of the underlying sediments also provides evidence of the presence of floating dead ice blocks in ephemeral glaciomarginal lake, glaciokarst and permafrost processes, and the depositional environment related to periglacial conditions.

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## **APPLICATION OF RUSLE EMPIRICAL MODEL FOR ESTIMATION OF POTENTIAL SOIL LOSSES FROM HEADWATER CATCHMENTS IN SOUTH-EASTERN LATVIA**

Studies of soil erosion by water and associated on-site and off-site processes in different landscapes is crucial for obtaining data relevant to appropriate management, restoration and rational using of soil resources. During the past decades, many of such studies had focused on the application of modelling techniques implemented in a GIS environment, because the data required for the calculations of soil losses can be prepared in a raster format allowing to predict erosion in a regular grid cell. Considering that, the aim of this research was to estimate soil erosion rates in south-eastern Latvia by application of GIS-based modelling. For research purposes, empirical RUSLE model and ArcGIS software were applied, and five headwater catchments drained by gullies were chosen as model territories. The obtained results indicate that modelled soil losses from the gully catchments greatly varies from 0.001 to 150.6 t ha<sup>-1</sup> yr<sup>-1</sup>, but the average values predicted by RUSLE for the model territories ranges from 0.25 to 0.58 t ha<sup>-1</sup> yr<sup>-1</sup>. It is necessary to highlight, that substantial plots of model territories are potentially prone to erosion rates above the tolerable threshold 0.3 t ha<sup>-1</sup> yr<sup>-1</sup>. The study shows that considering the complexity of geographic distribution of different soil types within the gully catchments on the one hand, roughness of surface of catchments and mass movement and linear erosion processes in the gully channels on the other hand, the applied RUSLE model cannot provide reliable quantitative predictions of soil losses. However, results of modelling can be reasonably used to estimate the spatial distribution of soil erosion risk and to identify potential erosion hotspots at local scale. Research reported in this paper was financially supported by the ESF project No. 2013/0020/1DP/1.1.1.2.0./13/APIA/VIAA/066 "Interdisciplinary Team of Young Scientists for Assessment and Restoration of Soil Quality and Usage Potential in Latvia".

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## **DEVELOPMENT OF LARGE-SCALE GEOLOGICAL MAP OF QUATERNARY DEPOSITS OF DAUGAVPILS CITY**

Large-scale maps of Quaternary deposits are important sources of substantial information for scientific research, spatial development, civil engineering and other applications. However, geological map at scale 1: 200 000 recently published in Latvia has low spatial resolution and thus is not applicable to the needs of detailed planning in the territory of Daugavpils city. At the same time, relevant geological information about geographic distribution of different types of Quaternary sediments in the city, their granulometric composition and other important characteristics are not available as digital data. Despite the fact that the amount of geological data obtained for the territory of Daugavpils city is comparatively large, these data are irregularly scattered and non-systemized, or their use in form of computer-processable digital geospatial data is limited because they are in form of paper printouts or have not coordinate reference. Hence, the obvious need for summarizing of fact mentioned above material and integrating of geological data into the environment of geographic information systems. In order to improve the situation and to open up the data for the wide range of specialists, complex, detailed studies was performed to work out geological map at scale 1 : 10 000 for the Daugavpils city. Tasks applied to achieve the goal include summarizing of geological information, field studies and geomatics research methods. Considering the necessity to provide cartographic material which corresponds to the up-to-date requirements of methodology of digital geological mapping, map was worked out in GIS. The obtained results indicate that the lithological diversity of Quaternary deposits forms complicate pattern of surface sediments within the territory of the Daugavpils city. However, the fine to medium sand material transported by glacial meltwater streams and accumulated in the Nīcgale ice-dammed lake, as well as deposits of aeolian origin are dominant.

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## **FLOOD RISK IDENTIFICATION USING REMOTE SENSING DATA (LIDAR): DVIETES FLOODPLAIN EXAMPLE**

**Keywords:** *airborne LiDAR, DEM, flood risk, hydrological data, floodplain, ArcGIS.*

There is no high quality digital elevation model in Latvia to represent ground surface accurately. LiDAR (Light Intensity Detection and Ranging) technology is used to ensure high quality and accuracy of land cover data as well as the possibility of using the data in addition to the modeling of the situation and the action plan in the different crisis situations, for example – to determine the flood risk areas.

The study area is Dvietes floodplain and its surroundings and the reason for the choice was airborne LiDAR data from year 2008. Biggest parts of the study areas are situated in Ilūkstes region. Ilūkstes region spatial 2007–2019 year plan's data about the risk of flooding areas in Ilūkstes region is outdated, as it is dated to year 2005, but the European Parliament and Council Directive 2007/60/EU on flood risk assessment and management of flood risk maps renewal cycle is six years.

The study aims to create a digital elevation model using airborne LiDAR data, and to identify flood risk areas in Dvietes floodplain territory based on said model and hydrological observation data analysis.

Importance of the study is related to the fact that remote sensing technology data is increasingly being used nowadays and this study describes in detail the methodology which can be used as a reference when working with airborne LiDAR data.

For the purpose of this study digital elevation model in the GRID form with resolution of 5x5m (using ArcGIS software) was created. This model is used to identify flood risk areas in Dvietes floodplain and give hydrological analysis.

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## **A LiDAR-DERIVED DEM AND GIS APPLICATION FOR THE IDENTIFICATION OF GULLY NETWORK IN THE GAUJA NATIONAL PARK**

The territories adjacent to the Gauja Spillway valley and slopes of the valley within the Gauja National park display a large number of deep and V-shaped incisions that branch together and form complex gully network systems of dendritic or trellis pattern. According to the data given in a literature, the density of the drainage network constituted by erosion landforms and headwater streams in the territory of the Gauja National park is more than 2 km km<sup>-2</sup>. Hence, this is one of the most appropriate areas for the study of gullies both in Latvia and probably in the Baltic countries. Thereby identification and geomorphological studies of gully erosion landforms were performed in GIS environment in order to quantify their spatial distribution and to extract geomorphometric parameters of gully incisions. For those purposes, high resolution 1 m pixel DEM generated from airborne LiDAR elevation data was used. Due to the presence of errors in LiDAR data associated with measuring process or micro-topographic features in gully thalwegs, the post-processing of DEM raster data was carried out to remove outliers. For that reason, Focal Statistics and Sink Fill tools of Spatial Analyst have been applied. It allows to suppress effects of non-existing sinks or real microforms and to avoid generating hydrological discontinuities and breaks, which can cause topologically incorrect delineation of thalwegs. After that, networks of gully channels were generated using standard flow accumulation methods with two critical area thresholds representing drainage areas of 0.1 and 0.5 ha. Than the delineated streams were converted to polyline vectors. Data of field survey by total station performed in on of the gullies provides an empirical basis for calibrating results generated by GIS

tools. The calibration of results indicates that LiDAR-derived DEM data provide more real and accurate resulting maps of gully systems than alternative ones obtained by analysis of contours in topographic maps.

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## **GEOMATIC METHOD APPLICATION IN DEVELOPMENT OF GIS-BASED MANAGEMENT SYSTEM OF DAUGAVPILS CITY NORTHERN INDUSTRIAL AREA**

**Keywords:** GIS, DBMS, Daugavpils City

The current territorial planning of Daugavpils City for 2006–2018 is a document with a graphic part that is designed on the topographic map basing on 1:10000 scale and in CAD format.

According to the Directive 2007/2/EK (INSPIRE) of the European Parliament and the Council, the aim of which is to create more and better publicly available geospatial data to deliver to users through Internet services, and following the regulations on municipality development planning documents, it is possible to develop territory planning documents for the next period, basing on the new tendencies of GIS and Internet technologies and using the city's topographic plan of 1:2000 scale as the basic map. The aim of the study is to establish GIS-based management system for the needs of territory planning with an example of Daugavpils City and the Northern Industrial Area, which will serve as the instrument of territory planning support and geospatial data management and will ensure public availability for residents, society and investors.

Within the study, the following topical layers were defined and represented graphically: cadastral information, functional zoning, aims of land plot use, types of land plot property, underground and elevated communications, geodesic points, protective zones, forest plots, polluted places and degraded objects, topography (relief), as well as a GIS database was designed, which is possible to be used in territory planning of the city and in the common public information system – the TAPIS. It will ensure execution of the INSPIRE Directive in relation to the territory planning data.

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## **STONE AGE SETTLEMENT MAPPING IN THE NATURE PARK “DVIETES PALIENE”**

During archaeological research it has been revealed that the first inhabitants entered into the territory of Latvia in the late Palaeolithic period between the end of 9th millennium and 8th millennium BC, when the last glaciers started to melt. The Daugava River valley was one of the first valleys in Latvia which was formed at the end of the Ice Age, it is considered as the main entry way of the ancient inhabitants, what is also proven by archaeological finds from the Dvietes river valley up to the Lubāna lake basin.

During summer and autumn of 2014, the soil probing was carried out in the Nature Park “Dvietes paliene” to map borders of the Stone Age settlements *Grīva* and *Sloboda* in nature. It was done in relation to the LIFE+ project which is focused on floodplain meadows restoration by milling of bushes, stumps and roots down to the depths of 15–20 cm from the soil surface. It is probable that during the milling the existing cultural layer of the Stone Age settlements can be degraded. As a result the existing and yet undiscovered ancient settlements can be partly destroyed.

As a result of probing of the *Sloboda* settlement in the depths of 0,7–0,8 m, pieces of a water-nut, hazelnuts and ceramic were found, and two cultural layers were identified in three sites, which allows to assume that the *Sloboda* settlement was inhabited in two different periods. But finding of the water-nut can probably refer to an ancient lake shoreline there.

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## **GEOMORPHOLOGICAL AND GEOLOGICAL CHARACTERISTICS OF VALLEY-LIKE SUBGLACIAL LANDFORMS NEAR SUBATE, AUGŠZEME UPLAND**

During the last years, we can observe the increase in the number of scientific studies in the field of Quaternary geology and geomorphology, which are focused on research of landforms of glaciofluvial origin, including tunnel valleys. Such studies are essential and allow to improve the understanding of the chronology of deglaciation and land surface processes in the Late Pleistocene, towards the end of the last Weischelian glaciation. At the same time, a lack of complex geological and geomorphological study of valley-like glaciofluvial landforms in Latvia in general and in the south-eastern part of the country, in particular, appears obvious. That relates also to Subate subglacial channels, which are located on the northern slope of Ilūkste hummocky area in the Augšzeme Upland. For this reason, in order to obtain data on the structure, morphology and morphometry of this channel, field studies and desk-based studies were carried out. The goal of the study was to perform complex geological and geomorphological studies and hence to obtain the data for identification of formation conditions of the channel. The performed studies reveal that valley-like subglacial landforms near Subate branch and form system of several interconnected and submeridionally oriented tunnel valleys with deep lakes inside them. These valley-like subglacial landforms are relatively narrow, rather deep, elongated and slightly meandering depressions extending southward from former ice margins. Obtained results demonstrate that considering the morphology and geological structure of the valley-like subglacial landforms near Subate, it can be assumed that these incisions were formed as erosion landforms by glacial meltwater during the Kaldabruņa (South Lithuanian) phase of deglaciation. However, additional studies are needed like OSL dating of sand which compose the slopes of tunnel valleys as well as using of ground penetrating radar for better understanding of geological structure of the channels.

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## **GEOMORPHOLOGICAL STUDY OF THE KALUPE TUNNEL VALLEY IN THE SOUTH-EASTERN PART OF THE EASTERN LATVIAN LOWLAND**

Although several tunnel valleys have been described on the Eastern Latvian Lowland, the extent to which the morphology of this elongated negative landforms and matters associated with their formation are currently studied is insufficient. That also relates to the Kalupe tunnel valley, which is located in the south-eastern part of the Jersika plain, Eastern Latvian Lowland. Therefore, in order to obtain data about the mega-linearity, morphology and morphometry of this landform, geomorphological studies were carried out. In the initial phase of research programme, desk-based studies of the Kalupe tunnel valley were performed. To achieve the objective of studies analysis of topographic maps at scale 1: 10 000 with contour interval 2 m, SRTM digital elevation model and GIS methods were used for obtaining of data. Obtained results demonstrate, that the Kalupe tunnel valley is oriented from NNW to SSE thus extending in a submeridional direction. To the northward from lake Lielais Kolupa it branches into two subparallel depressions, which joins with the river Dubna valley, while in south direction it stretches to the northern edge of inland dune field in surroundings of Daugavpils city. The total length of tunnel valley is ca. 18.6 km, in planar view it is slightly undulated and the lowest parts of elongated depressions are occupied by relatively shallow lakes. Considering the mega-linearity of the tunnel valley parallel to glacial flow lines of Upper Daugava ice tongue of the Lubāns ice lobe and its location in respect of marginal positions of Gulbene deglaciation phase, this landform has been interpreted as being the result of erosional processes by subglacial meltwater streams.

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## **GRANULOMETRIC ANALYSIS OF SAND DEPOSITS OF AEOLIAN ORIGIN IN THE SOUTHERN PART OF THE JERSIKA PLAIN**

The granulometric analysis of sand deposits of aeolian origin was carried out in this study in order to obtain data on the differences in the mean grain size and other Folk and Ward indicators, as well as to elucidate spatial distribution of these parameters across the inland dune field. This geomorphological formation is located in the eastern and northern parts of Daugavpils, as well as stretches northward and westward from the city and covers at least 260 km<sup>2</sup> of the southern part of the Jersika Plain, the south-eastern edge of the East-Latvian. For the obtaining of statistically meaningful data, 122 samples of sand were collected in the regular grid cells with size 1 × 1 km. Subsequently these samples were analysed at Laboratory of Quaternary Research by Malvern MASTERSIZER 2000 laser diffraction particle size analyzer, which allowed to estimate the granulometric composition of each sample within the range from 1 μm to 2000 μm. The deionized water with the refraction index 1.33 was used for dispersion of fine sediments. Statistical processing of granulometric data was carried out by GRADISTAT module, which can be integrated with MS Excel environment. The results of this study indicate that medium size of sand grains varies from 208,5 μm to 274,3 μm. The geographic distribution demonstrates that size of sand grains in general decreases from south-east to north-west, this direction coincide with the distal direction of the River Daugava paleodelta.

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## **MAPPING OF SOIL TOTAL ORGANIC CARBON REDISTRIBUTION IN THE POST-GLACIAL LANDSCAPE NEAR LODESMUIŽA, VIDZEME UPLAND**

Total organic carbon (TOC) is one of the most important constituents, which determines soil properties like nutrient turnover, structure, resistance to erosion, etc. which in turn affect the fertility and workability of soil. Simultaneously, TOC also is an essential key element of carbon cycle and has a significant impact on global carbon sequestration, because soil acts as an effective sink of carbon. Geographical patterns of TOC content in soil vary widely at the landscape scale, particularly for agricultural ecosystems where anthropogenic and natural processes like mass movement, water and tillage erosion of superficial deposits redistribute soil particles and TOC across the landscape. Although studies focused on spatial variability of TOC and factors controlling this process attract a growing interest of soil scientists, the extent to which these matters are currently studied in Latvia is still insufficient. By that this study investigates the TOC erosion and deposition patterns at local scale on hummocky post-glacial landscape in Vidzeme Upland, where present-day topography is formed mainly during the retreat of last Weichselian glaciation. The study area is located in Taurene Rural Territory, 3.8 km westward from Lodesmuiža. TOC content in the soil A-horizon has been estimated in 21 plots. The plots were selected so that they represent abandoned agricultural land with different degree of natural overgrowing by canopy vegetation. The results of mapping demonstrate that slopes affected by erosion have less TOC than soils in deposition areas. Hence performed studies indicate that soil erosion and subsequent redistribution of eroded material along the slope profile can stimulate carbon sequestration in hummocky landscape. Research reported in this paper was financially supported by the ESF project No. 2013/0020/1DP/1.1.1.2.0./13/APIA/VIAA/066 "Interdisciplinary Team of Young Scientists for Assessment and Restoration of Soil Quality and Usage Potential in Latvia".



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## **MORPHOLOGY AND TOPOGRAPHIC CHARACTERISTICS OF GEOLOGICAL AND GEOMORPHOLOGICAL NATURE MONUMENT "RUNDĒNU VELNA DOBE", EASTERN PART OF LATGALE UPLAND**

On the north-eastern slope of Dagda hummocky area in the Latgale Upland, several closed and ramparted circular depressions called "valna dūbes (devil's holes)" are observed at elevations over 190 m. Since 1997 part of the territory where these landforms are located was included into the national list of protected objects, hence establishing geological and geomorphological nature monument "Rundēnu velna dobe" with area 3.71 ha. Although first studies of these landforms have been conducted since the 1960s, their origin is still unclear. Several different hypotheses were proposed to explain morphogenesis of these geomorphological features, e.g. such depressions could be attributed to development of morainic kettle holes due to melting out of buried ice blocks, to processes in periglacial environment like formation of pingos, or even that they formed as meteorite impact craters. In such a context, the integrate research was carried out in order to obtain detailed topographic characteristics of ramparted depressions and their morphology, as well as about the geological structure of these landforms. The studies of the nature monument "Rundēnu Velna dobe" were performed by application of desk-based studies of topographic maps, geomorphological and geological field methods and techniques of geomatics. The results of studies demonstrate that negative landforms have rather steep radial slopes which encircle elongated or irregular shallow depression. In several such depressions small bogs have been formed with thickness of the peat layer more than 2 m. Considering the geographical location of these landforms in respect of marginal positions of Kaldabruņa and Gulbene deglaciation phases, as well as the results of geological and geomorphological survey, most admit that formation of ramparted depressions was associated with glaciokarst processes. However, in order to verify this assumption, additional studies including AMS <sup>14</sup>C dating of peat and macrofossil analysis is needed.

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## **DABAS AIZSARDZĪBA UN VIDES PLĀNOŠANA**

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## **NATURE PROTECTION AND ENVIRONMENTAL MANAGEMENT**

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## **ANALYSES OF THE DISTRIBUTION OF HERACLEUM SOSNOWSKYI MANDEN. IN THE TERRITORY OF JĒKABPILS DISTRICT AND MEASURES FOR ITS LIMITATION**

Lately, increased public and botanists attention is paid to the spread of different invasive plant species in nature. As in other continents, these problems caused by the negative impact of invasive species on ecosystems increase also in the European region.

In Latvia, the Giant hogweed has been recognised as invasive plant species according to the Cabinet of Ministers Regulation No 468. The Giant hogweed, in Latvian originally grown only in experimental

areas and for scientific research, and later also as fodder for animals, gradually began to naturalize and spread, mainly in fragile habitats. Gradually, this process became more spontaneous and hogweed is currently made up of hundreds of thousands of square meters of spinney high rank. Therefore, the goal of author's work is - to perform analysis of spread of the Giant hogweed in Jēkabpils county and develop proposals for its management. Surveying Jēkabpils county area the Giant hogweed plantations were found in Zasa, Rubeņi and Kalna parishes.

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## **ANALYSIS OF SAP FLOW MEASUREMENTS IN *Tilia x Vulgaris***

Nowadays the cities are expanding and impact of human activities on the environment is increasing. The role of green areas (parks etc.) in the urban environment is more important than ever. Trees have many environmental functions, for example, improving air quality. However, trees are very sensitive to various changes in the environment. In urban environment there are continuous changes - the different types of construction activities, road repairs, which can seriously affect the green areas. The Latvian National museum of Art, located in Riga, was being reconstructed during 2014. The construction work was very close to the park trees (*Tilia x vulgaris*) and in result the groundwater level was lowered.

Sap flow measurements were made in order to study the impact of lowered groundwater level on *Tilia x vulgaris* vitality. Heat ratio method and heat field deformation method sap flow sensors were installed on the stem of trees. In order to compare the results and understand the facts in relation to the stress conditions two observation modes were chosen - stress and control. Sap flow measurements, stem water potential and meteorological parameters were analyzed using mathematical and statistical data analysis methods.

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## **ASSESSMENT OF SALIX CAPREA STANDS IN SOUTH-EAST PART OF LATVIA**

Only few *Salix* species are classified as trees (*Salix alba*, *Salix fragilis*, *Salix x rubens*, *Salix caprea*) in Latvia and can reach a height of 20 m. *The other species of Salix genus are shrubs or dwarf shrubs.*

*Salix caprea* is one of the 10 most common species in Lithuania with growing stock 2,1 million m<sup>3</sup> in 2005. State Forest Service data shows that total area of *Salix caprea* stands in Latvia are 1697,7 ha and growing stock about 144 thousand m<sup>3</sup> in 2013.

Information about *Salix caprea* stands obtained from National statistical forest inventory database. The field works in four *Salix caprea* stands were carried out in April and May 2014. All *Salix caprea* trees were sampled for diameter at a breast height (DBH) and tree height was determined by use of Vertex ultrasonic hypsometer. Tree and stand average age was determined with Pressler auger. In addition, the distance was measured to the nearest four trees of each *Salix caprea* tree. In total 219 *Salix caprea* trees were measured.

The average tree diameter of *Salix caprea* stands was 15,83 ± 0,41 cm, average height 14,3 ± 0,22 m. Also there were many dead branches on measured *Salix caprea* trees and some trees were wind-felled. Many trees (81) have multiple trunks up to breast height.

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## **ASSESSMENT OF THE SOLID WASTE MANAGEMENT SYSTEM IN RĒZEKNE CITY**

Waste problem is urgent in local and global scale. In many parts of the world people are thinking about sustainable waste management only because dumps start to occupy huge territories. While in Latvia, as well as in Rēzekne city, one of the main factors to solve this problem is human health and environment protection.

According to data of previous observations, waste generation per person is estimated to increase in Rēzekne city. The largest amount of waste was recorded in the autumn and spring.

There are also recognized illegal dumping sites in Rēzekne city (about 13 places of illegal dumping). The largest amounts of illegal dumps were found in the eastern part of the city.

First results (obtained in 2013), show that only 81% of the inhabitants have contracted out waste collection to a waste management company. 56.5% of respondents consider that they don't have a possibility for waste sorting. But if there would be such possibility, then 89% of respondents would use it.

Although the number of inhabitants decreases in Rēzekne city, amount of collected waste from households increased.

In order to promote improvements in waste management system and to solve waste problem in the city, a variety of solutions were offered. Recommendation to improve existing situation in waste management in Rēzekne: educate people on waste issues; promote waste sorting and collection activities etc..

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## **CHARACTERISTICS OF BOMBINA BOMBINA (L.) POPULATED HABITATS IN THE ŠĒDERES RURAL TERRITORY IN 2014**

Biodiversity is the variety of life forms with different composition of species on earth. The existence of protected species as *Bombina bombina* increase biodiversity in Latvia. Regulations of Latvian Republic and the directives of the European Union promote the conservation of *Bombina bombina*. *Bombina bombina* distribution range includes also the south part of Latvia - Īslīces, Dēmenes, Eglaines rural territories. Species locality also registered in the Ilūkste region (Šēderes rural territory) in the summer of 2014. That could indicate the species range expansion in the southern part of Latvia. Some *Bombina bombina* localities and findings were known in Eglaine rural territory (Ilūkste region) until 2014. Two *Bombina bombina* localities („Bitītes” and „Sudrabi”) and one finding place were recorded in the

Šēdere rural territory during the study (June 2014). Methods used in field research: aural and visual tracking methods, soil analysis, geomatics research methods and determination of habitat by habitat classifier.

In locality „Bitītes” there was identified four vocalizing *Bombina bombina* males, while in the „Sudrabi” vocalized 7 specimens. Near the Šēderes village, *Bombina bombina* founded in wet meadow habitat. The

amount of the water was insufficient during the hot summer, in result, both localities dried up. The stream Pavlova flowing through the locality „Bitītes”, carrying a small exchange of water that retain this habitat. In both localities - „Bitītes” and „Sudrabi”, the fields are used for grazing the livestock and as meadows. In many information sources, livestock and cattle presence is seen as a positive feedback, because it helps to keep *Bombina bombina* habitat condition and reduce the overgrowth.

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## **DISTRIBUTION ANALYSIS OF INVASIVE PLANT SPECIES OF ASTER FAMILY IN JAUNGULBENE PARISH**

Aster family is the biggest family of plants, which belongs to angiosperms. Distribution of aster family around the world is very dominant. Invasive plant species of aster family mostly spreads by seeds and these species mainly are caulescent plants. Many invasive plant species of aster family are cultivated and most of them are introduced as ornamental plants.

Because of increasing economical situation of countries, also increase offer of ornamental plant species in trade places and this is the reason, why they are observed more and more in private gardens and parks. People cultivated gardens and parks mostly serve as donor areas of neophytes.

Such facilitating factors of invasion process as old grass burning and abandoning agricultural lands, are enabling environment of widespread neophytes distribution like *Solidago canadensis* L. and *Galinsoga parviflora* Cav. Such areas as long abandoned grasslands, if they are located near the donor areas, are particularly vulnerable to the invasion process of neophytes.

Distribution analysis of invasive plant species of aster family was made in Jaungulbenes parish territory, in summer and autumn of 2013 and 2014. All territory was divided in 422 squares (size of one square – 500x500 m). Each square was surveyed by “excursion” method, in route including different habitats.

Biggest stands of invasive plant species of aster family was founded near ditches, roadsides, railways, near abandoned buildings and in overgrown meadows. The most popular invasive plant species of aster family in Jaungulbene parish are *Solidago canadensis* L., *Galinsoga parviflora* Cav., and *Aster x salignus* Willd.

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## **ESTIMATION OF AIR QUALITY IN THE DAUGAVPILS CITY BY LICHEN INDICATION**

Lichen indication is currently widely used method for determination of air quality. Hitherto lichen indication researches previously done in Daugavpils on the one hand have been fragmentary, irregularly scattered and in terms of geographic representation did not comprise the whole city; and on the other hand different research methods were applied. Thereby the resulting data, obtained in previous researches, are non-comparable and at the same time do not correspond to the up-to-date requirements of European guideline for mapping lichen species' diversity as an indicator of environmental stress, including atmospheric pollution (European guideline for mapping lichen diversity as an indicator of environmental stress – Asta et al., 2002). For this reason in spring, summer and autumn seasons of 2012 and 2013 researches of lichen indications were done in the territory of Daugavpils city. The applied methodology conforms with the European guidelines for mapping of environmental stress related to atmospheric pollution, eutrophication and climate changes and is based on estimation of diversity of lichen species in the definite territory.

The data of lichen indication were obtained from the 82 quadrants. Data of inspection of 103 pines and 288 lindens, i.e. 391 trees in total were used in this research. As follows from the interpretation of the results of lichen indication, environmental quality in city territory, in general, can be evaluated as good. There are more epiphytic lichen indicator species of moderately polluted environment than indicators of significantly polluted environment, hence pointing moderately polluted environment. The obtained data indicate that the lowest scores of the lichen indication are associated with the central part of the city characterized by a dense network of roads and a heavy traffic, as well as with the areas of the private houses.

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## **GREAT CORMORANT (PHALACROCORAX CARBO) IN RĀZNAS NATIONAL PARK - CURRENT SITUATION AND FUTURE POSSIBILITIES FOR MANAGEMENT OF POPULATION**

Nesting cormorants in Latvia firstly were observed at the end of 80th. Increase of population is rapid and in 2012 there were estimated 3,106 breeding pairs in nine colonies. A total of 2,634 nests were counted, with the total coverage of all breeders estimated at 80 %. Great Cormorants are observed in two islands in lakes of Rāznas National Park. Detailed research on birds' impact on soil and vegetation in the park was done in 2007.

Monitoring of Great Cormorants give evidence that number of nests is still under 100 per island of Rāznas national park and there is no tendency to increase after 2011. One of reasons can be fact that the park situated close to the only place (Nagli fish pond complex) where the authorities permitted to shoot approximately 50-70 Great Cormorants yearly during 2010-2012. Currently situation related nesting Great Cormorants in Rāznas National Park is stable, but observations and experiences of experts give evidence that number of cormorants can increase sharply and caused substantial damage to environment which will take long time to avert. There are several islands suitable for nesting, and it is important to work out management plan of Great Cormorants before irreversible damage will be done.

Discussions with various specialists were organized during autumn of 2014 to gather information and expert viewpoints related Great Cormorants and their management in Rāznas National Park. Methodology of opinion poll of population living in and close to Rāznas National Park was designed and implemented in winter of 2014 to fixed observations of locals, as well as clarify their knowledge and understanding about Great Cormorants. Special target groups were selected for data analysis: owners of fish pounds and guesthouses, fisherman, hunters, as well as data were analyzed based on distance from residence place to islands with nesting birds. Acquired information was compared with research results of domestic and foreign authors to work out proposals for management of population of Great Cormorants in Rāznas National Park.

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## **HEALTH STATUS ASSESSMENT IN THE YOUNG GROWTH FOREST STANDS IN SKRUDALIENA RURAL TERRITORY**

Climate, environment pollution and anthropogenic impact changes cause the deterioration of sanitary status in forests. Bad influence reduction is necessary for forest quality assessment and the evaluation of management techniques to preserve the forest environmental and economic value. Particularly threatened is a young growth forest stands in early age.

There are several adverse factors, which often have a strong impact on tree growth, development and quality in young growth forest stands. Sometimes these factors may even lead to the total destruction of the forest. Young growth forest stands development influencing factors may be divided into several groups: abiotic, biotic and anthropogenic factors.

In this research, health status evaluation of young forest stands was investigated in Skrudaliena rural territory (Daugavpils district municipality). Plots had been created in young growth forest stands of aspen (*Populus tremula* L.), grey alder (*Alnus incana* (L.) Moench), silver birch (*Betula pendula* Roth) and Norway spruce (*Picea abies* (L.) H.Karst.) with different growing conditions. For evaluation were selected 6-7 years old young forests. Tending was carried out in this stands shortly before the studies. This way, the quality of the trees was assessed only for remaining trees.

A young forest stands survey was carried out in field conditions and plots were created in accordance with the methodological instructions. Tree species determination, tree height, and diameter and tree health measurement after several parameters were conducted.

The data obtained shows that higher negative impact for trees in all young forest stands makes abiotic factors. At five young forests were detected animal traces – feet, grazed out the bark of the trees, broken branches, beaver dams and flooded territories with dead trees. Also found wild boar diggings and areas where new tree growth is hampered by the prevalence of hops (*Humulus lupulus* L.) and a tree root rot.

The relatively less damage to trees causes climatic factors, wind and snow.

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## **THE CHAMPION TREES AND POTENTIAL CHAMPION TREES IN KOKNESES DISTRICT**

The champion tree is Latvian beauty, the green symbol. Those trees are very large and old, which have many purposes, for example, is part of Latvian landscape. Research was done in Kokneses district. The expedition were from 2014. year spring till 2014. year winter. During this expedition surveyed were 49 champion trees and 12 potential champion trees.

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## **IEKŠĒJIE ŪDEŅI, TO RESURSI UN VIDES KVALITĀTE**

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## **RESOURCES AND QUALITY OF INLAND WATER OBJECTS**

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## **CHEMICAL CHARACTERISTICS OF THE GROUNDWATER OF QUATERNARY AQUIFERS WITHIN LAUCESAS MUNICIPALITY**

In the countryside areas of Latvia groundwater of Quaternary aquifers are the main source of drinking water supply. At the same time, these aquifers are subject to pollution due to wide distribution of water-permeable sediments like fine- to medium-grained sands and gravelly-sand mixtures, which in many places constitute upper part of Quaternary strata in Latvia. Hence, it is very important to obtain information about chemical characteristics of the groundwater in order to evaluate the potential presence of contamination, to identify pollution sources and to implement appropriate measures for groundwater resources management and protection. For this reason, Laucesas municipality as one of the rural territories of the Daugavpils district was chosen as model territory for groundwater studies. In this territory, integrative research was carried out to obtain data on physical-chemical parameters of groundwater, as well as on a presence of some metals. In total, the 24 groundwater wells were inspected, and measurements of pH, SpC, TDS, E<sub>h</sub> by Hydrolab DS5 multiparameter sonde were performed in situ in two repetitions. Simultaneously groundwater samples from 12 wells were taken, and subsequent analysis of chemical composition was carried out in the laboratory by Rigaku Supermini Benchtop X-ray fluorescence spectrometer. Results show that values of physical-chemical parameters are typical for groundwater of Quaternary aquifers in Latvia. Notably, the geographical variations of these chemical characteristics correlate with a spatial distribution of different types of Quaternary sediments. The results of XRF spectrometry indicate, that although in terms of geological

structure the Laucesas municipality is characterised mainly by water-permeable sediments, contamination by heavy metals like zinc (Zn), copper (Cu), lead (Pb) and chromium (Cr) was not detected.

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## ZOOPLANKTON OF THE 6TH DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER IN 2013

The experimentally 6<sup>th</sup> drift expedition was done according to the so-called Lagrangian method during spring floods on April 22, 2013. Research of zooplankton communities was one of the parts in this complex studies in order to continue establish communities (abundance, taxa composition) of zooplankton and their changes during filling phase of the floods in the Middle Daugava. During the drift, the river depth, drift velocity and turbidity decreased whereas the water temperature and conductivity increased along the river channel. Within this reach of the river (62.4 km), the average depth was 10 m and the average drift velocity approximately 6 km h<sup>-1</sup>. It is very similar limnoecological conditions as in spring floods of 2010 and 2011. In total, 33 zooplankton taxa were recorded during this study (on average 10 taxa per sample). Zooplankton abundance was small, mean 4000 ind. m<sup>-3</sup> (min 2000, max – 7833 ind. m<sup>-3</sup>) and it is the smaller abundance comparison with other drifts expeditions. The most frequently recorded taxa (found at 80–100% of the sampling sites) were *Keratella cochlearis*, *Keratella quadrata*, *Notholca labis*, *Filinia longiseta*, Bdelloida and Cyclopinae development stage nauplii. The less occurring taxa (found at 38–67% of the sampling sites) were *Dicranophorus* sp., *Synchaeta* sp., *Lecane* sp., *Colurella* sp. Dominant taxa by abundance among sampling sites was Bdelloida.

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## THE FIRST DIURNAL DRIFT EXPEDITION ON THE MIDDLE DAUGAVA DURING THE SUMMER LOW WATER PERIOD

The moving water masses could be studied in several ways. According to the Lagrangian method, they are studied by moving along with them and observing downstream changes in their properties en route. However, this method is applied relatively rarely in the river research today.

During the spring floods of the last 7 years, 7 complex Lagrangian drift expeditions were performed on the Middle Daugava River by the Department of Geography and Institute of Ecology, Daugavpils University, by applying a manned drifting scientific research platform “Aventura”. The drift expeditions were performed between Krauja and Dunava villages during the daytime to study downstream transformation of properties and composition of the drifting flood water masses.

On July 9–10, 2014, the first diurnal drift expedition was performed on the Middle Daugava in order to study such processes during the summer low water period. During this drift expedition, hourly measurements of physical and chemical properties of the drifting fluvial water masses were performed by applying a HACH multiprobe that was equipped with the temperature, pH, conductivity, dissolved oxygen, red-ox. potential, turbidity and fluorescence sensors. In total, 23 measurements were performed in situ along the drift route. Simultaneously, the drift speed, water depth and water column transparency were measured by applying a GPS receiver, an echo sounding device, and the Secchi disc. In addition, geographical positions of the sites of instrumental measurements were recorded too.

The obtained data series were analyzed by applying graphical and statistical methods. The results revealed a diurnal cycle of several parameters probably related to the energy and gas exchange between the drifting water masses and the atmosphere.

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## **THE 7TH ANNUAL DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER - MAIN RESULTS**

The 7<sup>th</sup> annual drift expedition on the Middle Daugava River was conducted on April 29, 2014, during the spring floods, by applying a manned drifting research platform "Aventura" and a Lagrangian sampling strategy. The drift expedition started at 9:00 at Krauja village 10 km upstream from Daugavpils and continued for about 8 hours until the platform approached the Glaudānu Island at Dviete village. During the drift, complex scientific research program was conducted in situ by applying diverse sampling methods and equipment. It included automated measurements of physical and chemical properties of the drifting flood water masses by a HACH DS-5 multiprobe attached to the platform at the depth of 0.5 m, manual measurements of the river's depth, water transparency, drift speed and geographical position of the platform, as well as water sampling for phytoplankton, zooplankton and suspended matter. In total, a 25.35 km long stretch of the Middle Daugava River was drifted at the average drift speed 3.0 km h<sup>-1</sup>. During the drift, 17 sites were investigated and sampled along the route. The samples of suspended matter was analysed at the Laboratory of Quaternary Research, Daugavpils University, by applying a laser-diffractometry methods. The first results of this drift expedition showed downstream decrease in the drift speed, the river's depth, the water transparency, the red-ox potential and pH level. In contrast, the water temperature and conductivity increased along the route indicating possible impact of solar radiation, stagnant floodwaters and turbulence intensity. The suspended matter was dominated by particles with an average size 15, 50 and 125 µm. Proportion of the particle-size fraction 15 µm per sample significantly increased downstream from Daugavpils while proportion of the large-sized particles decreased therefore probably indicating a downstream sorting of the suspended bedload material by the Daugava's current.

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## **PREIĻUPES WATER QUALITY ASSESSMENT AND ITS INFLUENCING FACTORS**

This survey in 2014 autumn was carried out in order to clarify biological quality of the River Preiļupe water to compare with the year 2006. Because there are still operates such production units as LLC „Preiļu saimnieks” and stock company „Preiļu siers” which are potential cause of the water pollution. During studies of 2006 was observed that stretch of the river upstream town Preiļi was easily, in the territory town – heavily, but the downstream town – also easily biologically polluted.

The measurements of the water physico chemical parameters using multiparameter sonde HACH DS5, water velocity with Swoofer 3000 and collection of the macrozoobenthos samples by standard methods were done in the same sampling sites of the River Preiļupe as in 2006.

As show results the water biological quality by macrozoobenthos is not improved.



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## **MAKROZOOBENTOSA STRUKTŪRAS IZMAIŅAS UPES-ŪDENSKRĀTUVES SISTĒMĀ UZ PĻAVIŅU HES ŪDENSKRĀTUVES PIEMĒRA**

Pētījumā tika izmantots makrozoobentoss kā bioindikators, lai noskaidrotu makrozoobentosa struktūras izmaiņas upes posmā, kur tā pāriet ūdenskrātuvē. Paraugi tika ievākti izmantojot Ekmaņa-Berdža tipa grunts smēlēju (15,2 x15,2 cm), 2012. gadā 27 paraugi 3 vietās Pļaviņu HES ūdenstilpnes sākuma posmā (2 km leļpus Pļaviņu pilsētas, pie Klintaines karjera un pie Kokneses). 2014. gadā 4 vietās tika ievākti paraugi, pa 9 paraugiem katrā. Bez bentosa paraugiem tika izmērīts upes straumes ātrums un caurplūdums. Salīdzinot ar Pļaviņu HES ūdenskrātuves makrozoobentosa, iepriekšējo gadu pētījumiem (Kačalova 1967) tika konstatēts, ka organismu biomasa ir pieaugusi, sākot no 1961. gada līdz 2014. gadam. Makrozoobentosa organismu grupu raksturošanai 2012. gada rezultātiem tika izmantots Šenon-Vinera daudzveidības indekss. Salīdzinot 2012. un 2014. Gada iegūtos rezultātus ir konstatēts, upei pārejot ūdenskrātuvē ir vērojama sugu atšķirība. Upē augšpus ūdenskrātuvei vairāk ir sastopami *Oligochaeta* un *Chironomidae* klases pārstāvji tikai pie Pļaviņām ir vērojama *Mollusca* klases dominēšana.

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## **ANALYSIS OF LONG-TERM DYNAMICS OF CHANGE OF WATER LEVELS WITHIN STRETCH OF THE RIVER DAUGAVA FROM PIEDRUJA DOWN TO JĒKABPILS**

Rapid rise of water level in rivers caused by seasonal increase of discharge or particularly by hydrometeorological extremes and associated inundation of areas adjacent to overflowing streams and channels are objective of many scientific as well as applied studies. This interest of scientific community and civil engineers to these matters is comprehensible, because floods are causing direct damages not only in floodplain territories, but also in much larger areas, where off-site impact of floods have economical or environmental consequences. One of the such territories annually affected by floods is located within the river Daugava valley stretch from Piedruja down to Jēkabpils town. Considering that rise of water there level can exceed 10 m, it is crucial to find out regularities and factors controlling the recurrence of floods of high magnitude. Therefore the objective of this study was to elucidate the dynamics of change in water levels during the last 90 years within the mentioned above stretch of the river and to evaluate the potential relationship between levels of floods on the one hand and cyclic astronomic and climatic processes on the other hand. During the studies, database of water level of the hydrological stations Piedruja, Krāslava, Daugavpils, Vaikuļāni, Jersika, and Jēkabpils in period of 1924 till 2014 was prepared. Statistical and graphical analysis of hydrological was carried out, as well as dynamics of water levels changes were compared with indices characterising important climate fluctuations in the northern hemisphere, i.e. North Atlantic Oscillation, and indices of Smoothed sunspot numbers depicting Solar activity cycles. In contradistinction to an anticipated, obtained results indicate, that waters levels dynamics has a weak correlation with cyclic astronomic and climate processes.

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## **STRUCTURAL COMPOSITION OF PROTOZOOPLANKTON COMMUNITIES IN RELATION TO ENVIRONMENTAL FACTORS IN THE RIGA CITY SHALLOW LAKES AND RESERVOIRS**

Protozooplankton is a dominant grazer of phytoplankton and important component of microbial food web as a link between pico and nanoplankton to higher trophic levels (Fenchel, 1987, Laybourn-Parry, 1992; Mathes, Arndt, 1995, Cronberg, 2010 Zou Q et al. 2013). Their fast growing rate, relative abundance, biomass and diversity are used as indicators of organic and toxic pollution (Foissner, 1988, Mathes, Arndt, 1995, Pfister et al., 2002). The urbanization impact on ecosystems and their sustainability, biodiversity is recently under strong development. Therefore first investigations of protozooplankton – ciliate communities during vegetation period from April till October were carried out in two small lakes (Bābelītis, Gaiļezers) and two reservoirs (Bolderāja, Saurieši). Additionally the same investigation was done in the Riga city territory Gulf of Riga coastal waters at Vecāķi beach littoral waters. Ciliate samples were examined at 200-fold magnification by inverted microscope Leica following the Utermöhl method. Some ciliates were identified only to genus level, but all specimens in samples were measured and biomass estimated using simple geometric shapes (e.g. sphere, ellipsoid, cone, etc). The biodiversity, the dominance index of ciliate communities was calculated as well as the relations with environmental variables – temperature, oxygen, nutrients NO<sub>2</sub>-N, NO<sub>3</sub>-N, NH<sub>4</sub>-N, PO<sub>4</sub>-P, tot P, tot N and Chl a by PRIMER 6 package.

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## **BOTĀNIKA UN ZOOLOĢIJA**

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## **BOTANY AND ZOOLOGY**

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## **FAUNISTIC AND ECOLOGICAL FEATURES OF THE SPIDER COMMUNITIES (ARACHNIDA: ARANEAE) OF THE CALCAREOUS FENS OF LATVIA**

Calcareous fens are among the most threatened habitats of Europe. For that reason it is important to obtain as much data on fen inhabiting species as possible. Spiders have a great potential as biodiversity indicators, therefore it is worth to study them in rare habitats. The objective of this study was to investigate spider fauna and ecology in the calcareous fens of Latvia. The data were collected in the summers of three years: 2010, 2011, and 2012. Eight different calcareous fens were included in the study. Pitfall trapping and sweep netting were used as spider collection methods. The vegetation was also described in each of the studied fens. If all three years taken together, then a total number of 8,967 spider individuals was collected, representing 22 families and 153 species. The greatest number of spider species and individuals was collected in 2010. Among the dominant spider species there were many hygrophilous species, as well as some generalists and also some species typical of bogs. Our

results showed that the spider communities in the calcareous fens are characterized by a few abundant and a lot of rare species. Among the collected spiders there were also some species associated with other habitat types (e.g., forests, coastal sites, grasslands), which could be explained by the remarkable edge effect. Spider diversity in the fens was closely related with plant diversity – in those fens where the plant diversity was higher, more spider species were collected. The studied calcareous fens differed quite significantly from each other in their spider communities, which is probably because these fens were quite different in their plant communities too. Vegetation height negatively affected spider diversity, and it has been shown that taller vegetation was positively associated with the presence of the common reed *Phragmites australis*. However, the plant species which had the most negative impact on spider diversity was the sawtooth sedge *Cladium mariscus*.

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## **FOOD QUALITY AFFECTS GROWTH, SURVIVAL AND IMMUNITY IN THE GREATER WAX MOTH (GALLERIA MELLONELLA)**

Nutritional quality of food is of particular importance in allocation of resources to competing life history traits. The resources available to an individual in any given environment are finite. Nutritional quality of food is of particular importance in these life history decisions.

In this study we tested tradeoffs among growth, immunity and survival in three groups of greater wax moth (*Galleria mellonella*) larvae fed on diets of high and average nutritional quality. We found rapid growth and weak immunity (as measured by encapsulation response) in the larvae of the high-energy food group. The larvae grew slower on food of average nutritional quality. However, encapsulation response was stronger in this group. The larvae grew longer in the low-energy food group, and had the strongest encapsulation response. We observed the highest survival rates in larvae of the low-energy food group, while the highest mortality rates were observed in the high-energy food group. A significant negative correlation between body mass and the strength of encapsulation response was found only in the high-energy food group revealing significant competition between growth and immunity only at the highest rates of growth. We observed differences in expression of immunity-related genes. The results of this study help to establish relationships between types of food, its nutritional value and life history traits of *G. mellonella* larvae.

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## **PROTECTED VASCULAR PLANT SPECIES AND HABITATS IN THE TERRITORY OF EXPECTED NATURE PARK „RUGĒĻI”**

Projektētais dabas parks ‘Rugēļi’ (kopējā platība 388 ha) ir bioloģiski vērtīga, retām augu sugām un biotopiem bagāta teritorija Daugavpils 99pecifi. 20. Gs. astoņdesmito gadu beigās izraktā tolaik projektētā Daugavpils HES Daugavas apvedgultne, kur tagad zināma viena no lielākajām un vitālākajām zālainās cirvenes *Alisma gramineum* atradnēm valstī, ievērojamu daļu no projektētās aizsargājamas teritorijas platības klāj veci boreālie meži ar raksturīgo iekšzemes kapu struktūru un aizsargājamo augu sugu kompleksu (*Pulsatilla patens*, *Gypsophila fastigiata*, *Dianthus arenarius*, *Diphysium complanatum*). Savdabīgu zālāju kompleksu šeit veido teritorijas, kas saglabājušās pēc vecās Daugavpils lidostas likvidēšanas 20. gs. astoņdesmitajos gados, un plašajām kailcirtēm, kur tika izcirsti un vēlāk neatjaunojās vai daļēji atjaunojās sausie, nabadzīgie priežu meži, kuri auga HES

ūdenskrātuves appludināt paredzētajā teritorijā. Lielāko teritorijas daļu (277 ha) aizņem meži, kas reizē ir arī galvenā dabas vērtība dabas parkā. ĪADT „Ruģeļi” 13% no mežu teritorijas aizņem priežu meži, kas vecāki par 130 gadiem, kas šeit saglabājušies bez ievērojamas mežsaimnieciskās ietekmes kā pilsētu mežu aizsargjoslu meži. Kopējais teritorijā konstatēto aizsargājamo vaskulāro augu sugu skaits – 32, no kuriem 10 mikroliegumu sugas.

Pētījumos dabas parka teritorijā ir konstatēti pieci Eiropas Savienības nozīmes īpaši aizsargājami biotopi ar kopējo platību 92 ha. Divi ES nozīmes mežu biotopu veidi: veci vai dabiski boreāli meži 9010\* un aluviāli meži (aluviāli krastmalu un palieņu meži) 91E0\*. Trīs ES nozīmes zālāju biotopu veidi: smiltāju zālāji (6120\*), sausi zālāji kaļķainās augsnēs (6210) un mēreni mitras pļavas (6510). Zālāju biotopi sastopami nelielās platībās galvenokārt Ruģeļu ūdenskrātuves tuvumā. Īpaši vērtīgs zālāju biotops – smiltāju zālāji dabas parka teritorijā sastopams Daugavas ielejas nogāzēs un virspalu terasēs, konstatēts 6.19 ha platībā, kas ir 1,6% no teritorijas. Tajā aug Daugavas ielejai raksturīgas un Latvijā aizsargājamas sugas – ausainā plaukšķene *Silene otites*, naudiņu saulrozīte *Helianthemum nummularium* u.c. Kopumā var apgalvot, ka Ruģeļu apkārtnē ir viena no aizsargājamām sugām un dabiskajiem biotopiem bagātākajām vietām Daugavpils pilsētā un ilgtspējīgas izmantošanas kontekstā būtu apsaimniekojama saglabājot šeit esošās dabas vērtības.

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## **SCIENTIFIC AND PRACTICAL SIGNIFICANCE OF DACTYLOGYRUS DISEASE INITIATOR RESEARCH**

*Dactylogyridae* family representatives create dactylogyrus mostly on different cyprinid fishes in Latvian conditions. *Dactylogyridae* family representatives are ecto-parasites and usually live on fish's skin, and gills, and in other 100pecif. The biggest importance of many *Dactylogyrus* family representatives (*Dactylogyrus vastator*, *Dactylogyrus extensus*) who live on freshwater fishes gills, and evokes disease of fishes. They feed on host slime, epithelium, and blood, sometimes creating mass death. Dactylogyrids can evoke scars, and tissue ulcer, changes in gills – excessive gill's leaves tissue enlargement. Hooks create excessive excretion of slim, and gill's leaves borders become intended. Lack of oxygen for fish due to inefficient gill respiratory function makes fish to become sleepy, it starts to swim closer to water's surface, and its appetite lowers. Dactylogyrids are also a part of world's genetic recourses biological diversity. One of waters structural directive's 2000/60/EC requirements is to design and develop ecological water quality assessment system which is based on biological indicators. The development of such system in Latvia can also be use for data on fish 100pecificē – *Dactylogyridae* family representatives. Dactylogyrids are well seen in microscope on small magnification. Specie is determined by hooks and copulatory apparatus form, structure and size. In order to 100pecificē the species and assess the genetic diversity of the various populations the molecular methods are used. The number of gene copies and gene expression analyses of samples by the representatives of *Dactylogyridae* family of the inner waters of Latvia were used. To find out the true taxonomic affiliations, the molecular analysis is carried out and DNA samples from species were obtained. The resulting sequences were compared with sequences of gene bank. Polymerase chain reaction parameters reflect more accurately changes in population compared to the 100pecific tests. Genetic polymorphism 100pecificē100 individual activity and it may affected the development cycle of the *Daktylogyrus* species and fish disease. Invasion with the monogeneans are indicator that point at poor hygiene and the deterioration of water quality. The development of the 100pecific happens with a direct contact between fishes. The fishes develop a partial immunity against further infestation. This information updates the studies about fish resistance to the *Dactylogyridae* family representative genetic diversity's aspects. Data about *Dactylogyridae* family representative genetic diversity can help to evaluate the fish resources and develop a plan of action, which 100pecif the natural fish population retention. Proposals to regulate commercial fishing in lakes, rivers and reservoirs were developed based on the results of research.

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## **ANNUAL DYNAMICS OF MALLARD ANAS PLATYRHYNCHOS NUMBERS IN RIGA CHANNEL**

Mallards *Anas platyrhynchos* are among commonest duck species in Latvia. Mallards are very abundant in cities thus they have very important for urban ecosystems. It is crucial to know exact numbers and assess human impact on mallard abundance. In channel of Riga systematic mallard inventories were carried out from 01.01.2014. Till 31.12.2015. In winters 2013/2014 and 2014/2015 maximum mallard numbers were 623 and 752 accordingly. Number of wintering ducks depends very much from how harsh winter is. During warm winter of 2005 only 261 mallard was reported, 101pecif exceptionally cold winter in year 2001, 807 mallards were reported. Mallard numbers wintering in cities of Latvia is steadily increasing since 70s. In 560 in 1984, and 2800 in 1989. This is also affected by human feeding. This explains the decrease of mallard numbers in Riga during 90s when well-fair of citizens dramatically decreased and feeding of birds was not affordable. My efforts revealed that in 2014 mallard numbers begun to decrease starting with March (326 individuals), and rapidly continued to decrease till end of May when only 104 individuals were present. Most mallards overwintering in Riga channel after onset of breeding season leave to breeding grounds situated elsewhere. I recorded only one breeding attempt: female with seven pull. On 16.05.2014. After one week ducklings were gone. Depredation is very possible: such predators as herring gulls *Larus argentatus* and grey crows *Corvus corone* are very abundant. Intensive boat and catamaran traffic in channel scares ducklings, they flee on to the land and become easy prey. Between May and August mallard number (ca 110) 101pecif very little until August. In 10.08. 256 individuals were observed, and in 20.08: 334 mallards. This I explaine with the beginning of duck hunting season in 8th of August 08.08. From September till December number of mallards in channel gradually increased to 456.

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## **ANTROPOPHYTIC PLANT DISTRIBUTION ANALYSIS OF JAUNJELGAVA CITY**

Jaunjelgava has town rights since year 1647. Its area is 6.1 km<sup>2</sup>. Jaunjelgava is located on the left bank of the Daugava. The old town occupies the flat valley terrace only about two meters rises above the average water level of the Daugava (32.2 m above sea level.), but the city's south part rises along the valley slope of up to 68 m above the sea level. Climate region is the transition from 101pecif to continental climate. The prevailing winds during the summer are western and north-west, 101pecif winter are southern and south-west. Wind speed greater than 15 m/s is observed 10-45 days per year. The average annual temperature is + 5.8<sup>0</sup> C, the lowest temperature -35<sup>0</sup> C, but higher is + 30<sup>0</sup> C. In summer the average temperature is between +17<sup>0</sup> C and +17.5<sup>0</sup> C, while in winter the average temperature is -5.8<sup>0</sup> C to -6,2<sup>0</sup> C. Rainfall is 650-700 mm per year. Frost-free 101pecificē 140-160 days (Jaunjelgavas novada teritorijas plānojums 2013.-2024.).

The main method used in non-native vascular plant inventory of the city of Jaunjelgava is the route mapping method. The city was 101pecific into 500x500 m large squares (total 33 squares) and the whole area are monitored at least twice, but some squares more often. Maps are bound to Latvian Coordinate Systems LKS-92. The topographic maps of scale 1:10 000 were created using the cartographic base by Latvian Geospatial Information Agency.

Jaunjelgava were monitored in the 2014 vegetation season, during which were found in 33 non-native species from 17 families. The distribution of species mapping method based on a yes / no (presence / absence) data was used. The most common families are the Asteraceae and Cruciferae. The most common species in urban areas are *Bunia orientalis* (found 21 squares), *Conyza canadensis* (28) *Galinsoga*

*parviflora* (15), *Impatiens glandulifera* (18), *I. parviflora* (21), *Rumex confertus* (21) and *Solidago canadensis* s.l. (20).

Summarising information about species distribution in Jaunjelgava's urban area it can be concluded that a large diversity of species observed in the oldest buildings in the city, as well as ruderal habitats.

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## **BIOINDICATORS FOR ASSESSMENT OF COASTAL LAGOON AND WETLAND HABITAT STRUCTURE AND FUNCTIONS**

Habitat complex of coastal grasslands, wet beaches and coastal lagoons are very rare here in Latvia. Such areas are mainly distributed along the east coast of the Gulf of Riga from Kuiviži to Ainaži, the coast of Daugavgrīva, as well as the west coast from Bērziems to Mērsrags. Coastal lagoons are the only habitat of several rare species.

Coastal wetlands due to changes of land use and natural succession are overgrowing with reeds very rapid. Right now there is no specific monitoring and management methodologies of this kind of habitats in Latvian. And there is almost no information about effectiveness of previous management activities. Master thesis will develop indicators of habitat quality assessment that will provide an opportunity to assess the current state of the habitat and create awareness of the possible future development of the territory.

Since coastal wetland complex, which includes wide reed stands and lagoons, are difficult to survey, working in cooperation with the Institute of Environmental Solutions it is planned to approve use of innovative remote sensing techniques to monitor such sites like these. In a result it would lead to development of effective methods for Natura 2000 habitat monitoring.

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## **THE EFFECT OF HYDROGRAPHIC NETWORK OBJECTS ON DISTRIBUTION OF AVIAN MALARIA**

Malaria is a mosquito-borne infectious disease of humans and other animals caused by parasitic protozoans (a type of unicellular microorganism). Malaria and related-diseases are characteristic of birds, reptiles and mammals. Human malaria is caused by the genus *Plasmodium*, while avian malaria is caused by *Plasmodium*, *Haemoproteus* and *Lycocytosoon*. Commonly, the disease is transmitted by a bite from an infected fly (*Diptera*). The disease soon becomes chronic, it may negatively affect health condition of human beings and cause decline in animal fitness. Studies on avian malaria are important because it serves as a model for a better understanding of human malaria. So far morphology of pathogens, their life cycles, pathogenicity and geographic distribution are well understood. In case of human malaria many ecological relationships are revealed. However, there are a few studies on the role of abiotic factors on distribution of avian malaria. This study has been done in the forested area, dominated by the Scots pine (*Pinus sylvestris*), in the vicinity of the lake of Duneklis in the county of Kraslava. The effect of hydrographic network objects proximity on prevalence of avian malaria infection in members of mixed-species tit flocks has been analysed in this study. These bird flocks consisted of crested tits (*Lophophanes cristatus*), willow tits (*Poecile montanus*), nuthatches (*Sitta europaea*), coal tits (*Periparus ater*), great tits (*Parus major*), marsh tits (*Poecile palustris*), treecreepers (*Certhia familiaris*), goldcrests (*Regulus regulus*) and great spotted woodpeckers (*Dendrocopos major*).

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## **THE LICHEN AND MOSS COLLECTION OF DAUGAVPILS UNIVERSITY HERBARIUM**

Daugavpils Universitātes Sistemātiskās botānikas laboratorijā glabājas lielā un vērtīga sūnu un ķērpju kolekcija (uz 2014. gada nogali – 3.000 herbārija vienību). Herbārijs 2008. gadā reģistrēts starptautiskajā herbāriju reģistrā *IndexHerbariorum*, DU herbārija starptautiskais akronīms – DAU.

Pēc DU Sistemātiskās bioloģijas institūta dibināšanas 2005. gada jūnijā. DU Sistemātiskās Botānikas laboratorijā tika uzsākta zinātniskā herbārija vākšana. Kopš 2013. gada tiek veikta Daugavpils Pedagoģiskā institūta sūnu un ķērpju herbārija apkopošana. Katru veģetācijas sezonu kolekcija tiek papildināta ar jaunu materiālu. Vecākie ķērpju un sūnu herbārija vākumi ir datēti ar 1962. gadu. Institūta darbinieki ir vieni no pirmajiem Latvijā, kas uzsākuši veidot DAU herbārija elektronisko datu bāzi, kurā uz šo brīdi ir ievadīti ap 1000 ķērpju un sūnu ieraksti. Lielākā daļa kolekcijas joprojām tiek apkopota un ievadīta datu bāzē. Ķērpju kolekcijā ir paraugi no Latvijas, Itālijas, Igaunijas, Lietuvas, Norvēģijas un citām valstīm. Ķērpju kolekcijas lielākā daļa ir *Parmeliaceae* dzimtas sugas. No tiem *Menegazzia terebrata*, *Lobaria pulmonaria* uzskatāmi par retiem. Vērtīgākie ķērpju kolekcijas eksemplāri ir no *Caliciaceae* dzimtas, tādi kā *Microcaicum disseminatum*, *Chaenotheca hispidula*, *Sclerophora* spp. utt.

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## **CONFOCAL LASER SCANNING MICROSCOPY – AN ALTERNATIVE APPROACH TO MORPHOMETRICAL STUDY OF CARABODES SUBARCTICUS TRÄGÅRDH, 1902 ARMOURED MITES (ACARI: ORIBATIDA) IN COMPARISON TO THE TRADITIONALLY USED TRANSMITTED LIGHT MICROSCOPY**

**Keywords:** *measurements; transmitted light microscopy; confocal laser scanning microscopy; morphometry; Carabodes subarcticus.*

The precision of a biological investigation depends on many factors, also on how correctly the species identification has been executed. To identify specimens of small-size arthropods, such as armoured mites, not only qualitative traits but also measurements are required to be analysed. For such reasons specifically adapted methodology and advanced techniques of microscopy is necessary to be used. Till now a transmitted light microscopy has been used to observe and to measure traits of a free floating and manually rotatable half-millimetre mite placed in a cavity slide that is filled with a lactic acid. However, the procedure usually has turned out to be very complex without possibility to ensure an absolute fixation of the specimen. In this regard the precision of the measurement can be doubtful according to different theories of optics and an alternative tool for measuring traits of small arthropods is necessary to be described.

The adult individuals of *Carabodes subarcticus* Trägårdh, 1902 (n = 502) were collected in the Slitere National Park in 2008, and extracted using standardised methods. Thirteen morphological traits were measured on each mite using traditional transmitted light microscopy (TLM) with the cavity slide technique, and a new alternative technique of a confocal laser scanning microscopy (CLSM) combined with 3D measurement software. Quantitative results of both, TLM and CLSM methods are compared in association to the main theories in optics. So far in arthropodological studies CLSM has not been used for morphometrical purposes and a methodological description is presented.

Measurements showed high variability in most traits and for both microscopy methods. In overall, TLM measurements were smaller than those obtained with CLSM. Such results could be explained with different ability to rotate desired morphological structure in its most respective side profile and ability to obtain total fixation. Regarding to the theory of perspective by L.B. Alberti (1540) it is possible to make an accurate measurement of an object, for example seta of a micro-arthropod, only in the case when it is rotated perpendicular to the view. The object must be totally fixed after rotation, so that it can be measured precisely in its most respective side profile. Other differences and advantages of CLSM used in oribatid mite morphometry are discussed.

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## ĢENĒTIKA UN BIOTEHNOLOĢIJAS

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## GENETICS AND BIOTECHNOLOGIES

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### COMPARATIVE EVALUATION OF THREE DIFFERENT DNA EXTRACTION METHODS FOR GENETIC STUDY OF INVASIVE FRESHWATER BIVALVE *DREISSENA POLYMORPHA* (PALLAS, 1771)

The zebra mussel *Dreissena polymorpha* is a successful invader of freshwater bodies in Latvia and Europe. The species has been undergoing range expansion in Europe for approximately 300 years. The first introduction of the species was in Latvia (in the Gulf of Riga) in the mid-1800s. Certain life history traits, such as byssal thread attachment and a planktonic veliger stage, have facilitated its spread by shipping through these water bodies.

Using microsatellite markers allow assessment of the population genetic structure of these species, providing tools for analysing their invasion pathways and predicting probability of future spread. The DNA isolation for analysis from molluscs proved to be a difficult task, because the polysaccharides can inhibit the activity of many enzymes used in molecular biology, such as polymerases, ligases etc. Good quality DNA is essential to achieve good results in experiments, especially for PCR-based assay. In this research three DNA extraction methods were tested: rapid salt-extraction method by Sokolov (2000), universal and rapid salt-extraction of high quality genomic DNA for PCR-based techniques method by Aljanabi and Martinez (1997) and automatically rapid DNA isolation method, using the DNeasy Tissue Kits from Qiagen, Inc. DNA quality and quantity was analysed using spectrophotometer BioSpec-nano (Shimadzu) and horizontal gel electrophoresis. In result the three different DNA extraction methods were comparatively evaluated.

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## **DNA EXTRACTION FROM FORMALIN-FIXED, PARAFFIN-EMBEDDED TISSUE SAMPLES OF HYDATID CYST**

Formalin-fixed, paraffin-embedded (FFPE) tissue is widely used technique for clinical sample preservation and these samples are a reliable source of DNA. FFPE samples are not assignment for molecular analyses, but recently, have been discovered, although the purified nucleic acid is highly fragmented, but is suitable for variety of downstream genomic analyses.

*Echinococcus* is small endoparasitic flatworm and has an indirect life cycle in which the adult is hermaphroditic and the larva, the hydatid cyst, proliferates asexually. An adult *Echinococcus* is only a few millimetres long and rarely possesses more than five proglottids. *Echinococcus* requires two mammalian hosts for completion of its life cycle. Knowledge of the genetic variation in *Echinococcus* populations is essential for developing predictive models and in elucidating transmission patterns. Genetic variation exhibited by *Echinococcus* will not be reflected phenotypically, but is significant for population genetic studies.

Various methods exist for the DNA extraction from FFPE tissue sections and the technical procedures for DNA extraction include many steps. During this study we have optimised DNA extraction protocol for FFPE tissue samples of *Echinococcus*. Total DNA extraction from FFPE tissue was performed using QIAamp DNA FFPE Tissue Kit (Qiagen, Germany) with modifications. DNA quality and quantity were analysed using the spectrophotometric technique. Real-time PCR was used for identification of samples there is hydatid cyst.

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## **EFFECTS OF 1,4-DIHYDROPYRIDINE DERIVATIVES ON INOS AND ENOS GENE EXPRESSION IN RAT BLOOD AND KIDNEYS AND DNA INTEGRITY IN STREPTOZOTOCIN INDUCED DIABETES MELLITUS**

Diabetic nephropathy is one of the main complications of type one *diabetes mellitus* (T1DM). It is associated with metabolic changes of nitric oxide (NO) and impaired DNA repair. In DM NO production and DNA breakage level might be normalised with 1,4-dihydropyridine derivatives.

Methods. DM was induced in *Wistar* male rats by streptozotocin (STZ) (50 mg/kg). Nine days after DM approval rats received one of the compounds for three days: glutapyrone, J-9-125, metcarbatone, etcarbatone (0.05 mg/kg or 0.5 mg/kg), or myricetin (flavonoid, 50 mg/kg). mRNA expression of inducible NO synthase (iNOS), endothelial NO synthase (eNOS) and RNA polymerase II genes in kidneys and blood was detected by qPCR. DNA single-strand breaks were determined in blood nucleated cells by means of single-cell electrophoresis.

Results. In rats with STZ induced DM was increased iNOS gene expression in kidneys and blood, and decreased eNOS gene expression in kidneys compared to control rats. In control groups iNOS gene expression in kidneys was increased by 0.05 and 0.5 mg/kg glutapyrone, 0.5 mg/kg etcarbatone, 0.05 mg/kg J-9-125, and 0.05 mg/kg metcarbatone ( $p < 0.05$ ), while eNOS gene expression was decreased by 0.5 mg/kg etcarbatone ( $p < 0.05$ ). In DM model iNOS gene expression in blood was

decreased by 0.05 mg/kg metcarbatone and 0.5 mg/kg etcarbatone ( $p < 0.05$ ), but in kidneys – by 0.5 mg/kg etcarbatone ( $p > 0.05$ ). eNOS gene expression in kidneys was increased by 0.5 mg/kg J-9-125 and decreased by 0.05 mg/kg J-9-125 ( $p < 0.05$ ). Induction of the DM caused an increase of the level of DNA breakage. It was decreased by 0.05 mg/kg J-9-125 and 0.5 mg/kg metcarbatone ( $p < 0.05$ ). Conclusion. iNOS gene expression in T1DM model tends to be normalized by metcarbatone (0.05 mg/kg) in blood and by etcarbatone (0.5 mg/kg) both in kidneys and blood. eNOS gene expression in kidneys is normalized by J-9-125 (0.5 mg/kg). The level of DNA breakage is decreased by J-9-125 (0.05 mg/kg) and metcarbatone (0.5 mg/kg).

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## **INFLUENCE OF CYTOCHROME PATHWAY RESPIRATION INHIBITOR (ANTIMYCIN A) ON CHANGES OF THE CONTENT OF PHOTOSYNTHETIC PIGMENTS, LIPID PEROXIDATION AND ACTIVITY OF ANTIOXIDANT SYSTEM OF WHEAT SEEDLINGS DURING HYPERTHERMIA**

**Key words:** *Triticum aestivum* L., pigment content, lipid peroxidation, antioxidant enzyme, antimycin A, hyperthermia.

In this investigation, we assessed the possible role of mitochondrial energy-dissipative system in regulation of energy efficiency in conditions of cytochrome pathway inhibition. The current study aimed to determine the influence of cytochrome pathway respiration inhibitor antimycin A (AA) on the content of photosynthetic pigments, lipid peroxidation (MDA) and catalase activity in wheat seedlings during hyperthermia (42°C). The concentrations were determined in apical and basal parts of coleoptiles. The results demonstrate that in apical and basal parts of etiolated coleoptiles was a decrease of chlorophyll *a* by 11–18% and chlorophyll *b* by 5–24% during hyperthermia. Results indicated that in coleoptiles that were grown on light was a significant decrease of chlorophyll *a* by 24–36% and chlorophyll *b* by 19–27% compared with control seedlings during hyperthermia. Our results have shown that the combination of high temperature and AA in coleoptiles, grown in the presence of light reduce the content of pigments by 10–17%. The results demonstrated that the concentration of MDA under the influence of hyperthermia in etiolated coleoptiles increased by 26–40% and grown on light by 8–32%. An activity of catalase during hyperthermia was higher by 37–64% compared with the control group. Antimycin A-treated wheat seedlings led to a reduction of MDA concentration by 10–16% and activity of catalase by 20–37% in the apical parts and by 15–47% in basal parts of coleoptiles. The decrease of pigment concentration indicates an increase of oxidative processes during hyperthermia, as evidenced by the increase in catalase activity and lipid peroxidation. The results clearly demonstrate that treatment by AA serves as a protective mechanism to increase their resistance to hyperthermia. It should be concluded that functioning in plant mitochondria primarily cyanide-resistant respiration which induced by AA includes the regulation of energy accumulation in cells in stressful conditions.

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## OPTIMIZATION OF DNA EXTRACTION FROM MUSCLES OF DIFFERENT FISH SPECIES

Molecular data obtained from different kinds of fish samples are used to explore evolutionary differentiation among populations, phylogenetic sites, ecology studies and etc. A number of the molecular studies of aquatic species have increased during last years. However, DNA extraction procedures are still not universal for all kinds of samples and there are variable techniques, protocols available for such type analyses. Certainly, each of suggested method shows different quality of results. Optimization of DNA extraction procedures is an essential prerequisite for validated, truthful results of research.

Fishes have more muscle than any other vertebrates and have two different types of muscles: red and white, the type is related to the amount of hemoglobin in the muscles, and there are a lot of mitochondria (white 0.5–8%, red 25–38%).

DNA extraction protocol was optimized for muscles preserved in ethanol; 49 samples of European eel (*Anguilla anguilla*) and 68 samples of European perch (*Perca fluviatilis*) were used. Fish material used in study was collected during four years long time period. For DNA extraction optimization were used two different methods one using magnetic silica beads, but another one spin column-based. DNA quality and quantity were tested using spectrophotometer method. According to obtained data was selected suitable protocol modification for such type samples for further analyses.

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## THE EFFECT OF POLYMORPHISMS MHC CLASS II GENES AND ASSOCIATIONS WITH LYME BORRELIOSIS

**Introduction.** Lyme disease (Lyme borreliosis) is caused by infection with the tick-borne bacterium *Borrelia burgdorferi*. Human pathogen, *B. burgdorferi* causes a multisystem disease that may affect the skin, nervous system, heart, or joints. The disease incidence in Latvia is one of the highest in Europe.

**Objective.** The purpose of this study was to determine -DR, -DQ alleles HLA in patients with clinical, epidemiological and laboratory approved Lyme borreliosis diagnosis.

**Materials and methods.** The study included 103 patients with clinical stage – *erythema migrans* and 100 control (healthy) persons. The diagnosis was confirmed at the Latvian Infectology Center. Immunogenetic examinations were performed RSU laboratory of Clinical Immunology and Immunogenetics with PCR-SSP method. The significance of differences in individual subtypes between patients and controls was assessed by Fisher exact test. Odds ratios and 95 % confidence intervals were computed by standard methods. This work was supported by the European Social Fund (ESF) project “Support for doctoral study program and scientific degree receiving in Rīga Stradiņš University, agreement No 2009/0147/1DP/1.1.2.1.2/09/IPIA/VIAA/009.”

**Results.** The frequency HLA -DRB1 \*17(03) (OR 4.06; p=0.002) and -DRB1\*04 (OR 3.22; p=0.011) was significantly higher in the Lyme disease patients compared with the control groups. However, the frequency of allele DRB1\*10 (OR 0.16; p=0.036) was lower in Lyme borreliosis patients and significantly higher in controls. We did not detect significant differences in frequencies of HLA-DQ

alleles. Although, the frequencies of HLA-DQA1\*0201, -DQA1\*0501, and DQB1\*0201 were higher in patients in comparison with control group, but the difference was no longer significant.

**Conclusions.** These results suggest that the inflammatory events of the subacute arthritis can set the stage for development of chronic disease in individuals possessing an HLA susceptibility allele. In particular, immunogenetic markers -DRB1\*17(03) and -DRB1\*04 contributes definitely to a genetic predisposition to *Borrelia burgdorferi* infection in Latvian population, which may have implications in our understanding of pathogenesis of this disease. To receive more reliable data on the prevalence of HLA alleles in Latvian population and their possible relationship with Lyme borreliosis it is necessary to continue the investigation and extend the range of persons under investigation.

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## **CORRECTION POSSIBILITIES OF THE PARAMETERS OF NITRIC OXIDE METABOLISM AND DNA INTEGRITY IN RATS WITH STREPTOZOTOCIN INDUCED TYPE 1 DIABETES MELLITUS (DMT1) AND IN DMT1 PATIENTS' BLOOD EX VIVO**

**Introduction:** 1,4-dihydropyridines (1,4-DHP) has proven to be a pluripotent substance that can be used in correction of many pathological conditions. There is evidence that the 1,4-DHP derivative AV-153-Na is able to repair the damage caused by oxidative stress *in vitro*. Microvascular complications in DMT1 are based on hyperglycemia-induced oxidative stress and subsequent DNA breaks, incorrect repair of which may cause structural and functional modifications of cells.

**Objectives:** Our goal of the first part of work was to determine the association of NO metabolism and DNA integrity with DMT1. Goal of the second part, based on the results obtained, was to assess DNA repairing abilities of AV-153-Na in DMT1 conditions.

**Materials and methods:** 88 patients with DMT1 and 44 healthy controls matched for age, sex and BMI were involved. Anamnesis and other data was collected through a questionnaire, blood biochemical analysis was performed in a clinical laboratory. NO production in blood was detected by the electron paramagnetic resonance spectroscopy, nitrite and nitrate (NO<sub>2</sub><sup>-</sup>/NO<sub>3</sub><sup>-</sup>) concentrations in serum and urine with the Griess reaction and DNA damage in nucleated blood cells by the alkaline single cell gel electrophoresis.

AV-153-Na impact on DNA repair was analysed in blood *ex vivo* of 9 DMT1 patients and 6 healthy controls. Blood was incubated for three hours in 37°C 5% CO<sub>2</sub> environment with AV-153-Na in 1nM, 5nM and 10nM concentrations. Then, alkaline single cell gel electrophoresis was performed.

DMT1 in rats was modeled with intraperitoneal streptozotocin (STZ) injection. In the ninth day after DMT1 induction three day therapy with AV-153-Na 0,5 mg/kg *per os* was started. After euthanasia of rats, biochemical analysis of organs was performed.

**Results:** NO and DNA damage were significantly higher in DMT1 patients (p<0.0001), while NO<sub>2</sub><sup>-</sup>/NO<sub>3</sub><sup>-</sup> in serum (p<0.007) and urine (p<0.04) were lower compared to the controls. In patients, NO was inversely proportional to NO<sub>2</sub><sup>-</sup>/NO<sub>3</sub><sup>-</sup> in serum (p<0.04) and urine (p=0.05), thus, suggesting NO synthase-independent NO production.

We have also revealed a direct correlation between NO and DNA break levels (if compared to the average of controls) with HbA1c (p<0,04) and the duration of the illness (p<0,05). In comparison to the average level of controls NO and DNA break levels were high in 74.14% of patients and only in 16.28% of controls. But in 26% of patients NO was inversely correlated to the DNA break levels (p<0,0001), thereby NO and DNA breaks are probably adjacent factors, which are characteristic of DMT1.

In the nucleated blood cells of healthy controls after three hours of incubation *ex vivo* with AV-153-Na none of the concentrations showed impact on DNA single-strand breaks, whilst in DMT1 patients 5nM concentration has statistically significantly lowered the levels of DNA damage ( $p=0,0016$ ).

In the experiment of animals AV-153-Na in DMT1 conditions lowered the elevated iNOS protein expression in kidneys and heart and normalized lowered eNOS mRNS and protein levels in kidneys.

**Conclusions:** Higher levels of NO production and DNA breaks in blood cells are characteristic of DMT1. In future these parameters might be used as therapeutic targets for pathogenetic therapy of DMT1. AV-153-Na is a potential DNA repair stimulating agent in a case of DMT1.

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## PHOTOCHEMICAL EFFICIENCY AND ADAPTATION OF PHOTOSYSTEM II IN ELODEA CANADENSIS MICHX. AFTER EXPOSURE TO SUDDEN AND GRADUAL SALT STRESS

The aim of this study was to comparative analysis of the impact of different NaCl levels in the aqueous medium on functional parameters of *Elodea canadensis* Michx. photosynthetic apparatus. Parameters of chlorophyll induced fluorescence:  $F_0$ ,  $F_v / F_m$ ,  $F_m$ ,  $F_t$  were measured by fluorimetry. Experimentally found that after exposure in the medium to the high NaCl concentration, minimal fluorescence ( $F_0$ ) reduced compared to control samples and decrease the maximum quantum yield values ( $F_v/F_m$ ) of photosystem II (PS II). There is a tendency to further declines of the maximum quantum yield ( $F_v / F_m$ ) of photochemistry PS II and the rate of transport of electrons after substantial increasing of NaCl levels in the medium. It is obvious that after prolonged exposure time under the high levels of salinity the photosynthetic apparatus of *Elodea canadensis* Michx. has undergone significant damage and unable to recover from the internal recovery system. The control samples values of fluorescence indicators ( $F_v / F_m$ ) during the experiment were in the range of 0.6–0.8, that corresponds to a zone of tolerance of the plant. Under the conditions of insignificant increase of NaCl concentration in the aqueous medium, the photosynthetic apparatus of *Elodea canadensis* Michx. retains the ability to effectively implement the primary separation of charges in the PS II and all measured fluorescence parameters, which significantly changed, quickly recovered to initial level. The high concentration of NaCl in aqueous solution harmed ionic and osmotic homeostasis in plant cells and observed irreversible changes of chlorophyll fluorescence parameters. The results demonstrate that the change induced chlorophyll fluorescence parameters at high NaCl concentrations are dependent upon the strength and time of stress influence.

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## **THE MORPHOLOGICAL CHANGES IN THE FUNCTIONALLY DIFFERENT PLANT ORGANS IN THE PRESENCE OF MITOCHONDRIAL PORE MODULATOR (CYCLOSPORINE A) UNDER TEMPERATURE STRESS**

Morphology of etiolated wheat seedlings was investigated during the onset of senescence in senescent organs (coleoptiles), developing organs (the first leaves) and in the roots. Senescence was induced by different duration of physical (heat) shock. High temperature reduced root dry weight, root length and root/shoot ratio. Unexpectedly, the first leaf length, fresh and dry weights (FW and DW), relative growth rate (RGR) and relative water content (RWC) were not significantly affected by the high temperature except long-term (24h) high temperature exposure. In contrast, FW, DW and RWC of coleoptile increased during the first 3 days after short-term (15, 30 and 60 min) high temperature exposure.

It is assumed that treatment by the mitochondrial permeability transition pore inhibitor cyclosporin A (CsA) retard oxidative stress in plant cells during stress and as a result leads to morphological changes. Treatment of wheat seedlings in micromolar concentrations ( $10^{-4}$  g/l) of CsA prevented FW and DW reduction and water loss in the senescent organs (coleoptiles) regardless of duration of high temperature exposure. The adverse influence of long-term heat stress on morphological traits of the first leaf decreased in presence of CsA compared to the control first leaves. The 42 °C treatment caused significant reduction in root/shoot ratio during the first 3 days after long-term exposure. The roots were the most sensitive to heat stress regardless of presence of CsA or the duration of heat exposure. Results indicated that despite the reduction in root length and weight observed under high temperature exposure, shoot growth was not much affected during early growth stages.

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## **THE STUDY OF GENETIC STRUCTURE OF LATVIAN BOMBINA BOMBINA POPULATION ON NORTHERN BORDER OF ITS DISTRIBUTION AREAL BASED ON DNA MICROSATELLITES ANALYSIS**

The fire-bellied toad *Bombina bombina* is endangered European amphibian species with the northern border of its distribution areal in Latvia. *Bombina bombina* included in the first category of Latvian Red Book. It is an important object of research.

As it known, genetic diversity is important for the population ecological plasticity. It allows population to adapt to varying environment conditions. To investigate population genetic structure and diversity, molecular biology study should be performed. For this study was optimized high quality DNA isolation methods from fire-bellied toad tissue samples and non-destructive DNA sampling method using buccal swabs. After sampling, the genomic DNA was extracted using universal rapid salt-extraction from tadpole tails and using salting out the cellular proteins with a saturated ammonium acetate solution from fresh buccal swabs. The quantity, quality and suitability of the isolated DNA samples for polymerase chain reaction were checked by using spectrophotometric measurements at the ratio of the absorbance at 260/280nm and horizontal 1,5% agarose gel electrophoresis. PCR conditions for microsatellites *Bobom 1A*, *Bobom 7B*, *Bobom 3A*, and *Bobom 5F* were optimized using temperature gradient on the PCR device *Eppendorf Vapo.protect*.

Four microsatellites (*Bobom 1A*, *Bobom 7B*, *Bobom 3A*, *Bobom 5F*) were investigated using vertical 10% polyacrylamide gel electrophoresis. After collected data analysis was determined criteria of Latvian *Bombina bombina* population genetic parameters, such as allele frequency, genotype frequency, observed and expected heterozygosity and others. It was found that the heterozygosity level in *Bombina bombina* population in Latvia (northern border of distribution area) is similar to heterozygosity level for *Bombina bombina* population in Anatolia (Turkey), where is the southern border of its distribution area.

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## **UTILITY OF MICROSATELLITE MARKERS FOR EFFICIENT GENETIC ANALYSIS OF POPULATION STRUCTURE IN SEVEN COREGONUS ALBULA POPULATIONS IN LATVIA**

Microsatellite markers are routinely used to investigate the genetic structure of natural populations. The knowledge of how genetic variation is partitioned among populations has important implications for ecology and conservation biology. Estimates of population differentiation are important to understand the connectivity among populations and represent important tools to develop conservation strategies. Due to the high mutation rate of microsatellites, they are potentially the most informative molecular markers. However, the identification and development of new microsatellite markers is difficult and it is quite time-consuming and expensive as well. Up to now isn't known any identified microsatellite markers for *Coregonus albula*. Therefore, for this study 14 microsatellite loci were selected. These microsatellite markers earlier were successfully used for genetic research of different *Coregonus* species to the monitoring, protection and management of this species. 6 microsatellite markers (*BWF1*, *Cisco90*, *Cisco126*, *Cisco157*, *Cisco 200* and *Cisco106*) had a good reproducibility in all studied samples of vendace from seven Latvian lakes and 5 of them were used for genetic analysis.

Allelic variation was high in all investigated vendace populations with 8 to 29 alleles per locus and expected heterozygosity ranging from 0.51 to 0.95. No signal of linkage disequilibrium in any pairwise comparison globally or within the two population samples was found. There was a significant deviation from Hardy-Weinberg equilibrium (homozygote excess) only in *BWF1* locus in Lake Alūksnes vendace populations. The estimates of population genetic differentiation varied in all investigated loci.

These loci might serve as an efficient population screen for evaluating levels of genetic polymorphism and genetic structure of vendace populations in Latvian lakes. The high level of polymorphism revealed by these loci will be relevant to study ecology and conservation biology of vendace populations.

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# PĒTNIECĪBAS PRASMES: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## RESEARCH SKILLS: EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### PRIEKŠLAICĪGAS PAMATIZGLĪTĪBAS APGUVES PAMEŠANAS IEMESLI DAUGAVPILS JAUNIEŠIEM

*Atslēgas vārdi: jaunieši, izglītību priekšlaicīgi pametušie, pamatizglītība, iemesli.*

ANO Bērnu konvencijā tiek uzsvērts, ka izglītība ir viena no bērna pamattiesībām. Latvijā pastāv bezmaksas izglītība, valsts nodrošina jauniešiem iespēju mācīties, attīstīties un realizēt savu potenciālu.

Izglītības priekšlaicīga pamešana ir aktuāla problēma ne tikai Eiropas Savienībā, bet arī visas pasaules mērogā. Daudzās valstīs jaunieši dažādu iemeslu dēļ pārtrauc mācības, pamet skolu, neiegūst pamatizglītību. Izglītības priekšlaicīga pamešana ir šķērslis turpmākajām darba iespējām un valsts ekonomikas attīstībai. Tā kavē produktivitāti un konkurētspēju un ir iemesls nabadzībai un sociālai atstumtībai.

18 Daugavpils skolas piedāvā jauniešiem iegūt pamatizglītību, tomēr ne visi jaunieši izmanto šo iespēju.

Pētījuma nolūks ir izpētīt, kādi iemesli ir Daugavpils jauniešiem priekšlaicīgi pamest pamatizglītību. Pētījuma gaitā ar anketu palīdzību tiek noskaidrota skolēnu attieksme pret dažiem izglītību priekšlaicīgas pamešanas iemesliem. Tiek intervēti eksperti izglītībā un noskaidrots viņu viedoklis par priekšlaicīgas pamatizglītības apguves pamešanas iemesliem.

Pētījuma secinājumos tiks atpoguļoti faktori, kuri ietekmē Daugavpils jauniešus priekšlaicīgi pamest izglītību. Tiks sagatavoti ieteikumi skolām, vecākiem un skolēniem.

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### INTERESES VEICINĀŠANA LASĪŠANAI JAUNĀKĀ SKOLAS VECUMA SKOLĒNIEM, PIEDALOTIES PROGRAMMĀ „BĒRNU UN JAUNIEŠU ŽŪRIJA”

*Atslēgas vārdi: jaunākā skolas vecuma skolēni, lasīšana, intereses veicināšana, „Bērnu un jauniešu žūrija”.*

Moderno tehnoloģiju laikmetā bērnu interese par grāmatu lasīšanu mazinājusies. Starptautiskie pētījumi parāda to, ka skolēnu lasīšanas prasmes kļūst vājākas. Kā panākt, lai skolēni lasa grāmatas? Kā skolēnus ieinteresēt lasīšanai? Viena no iespējām ir iesaistīšanās lasīšanas veicināšanas programmā „Bērnu un jauniešu žūrijā”, kura Latvijā darbojas jau piecus gadus. Tās uzdevums ir konsolidēt valsts un pašvaldību pasākumus un līdzekļus lasīšanas veicināšanai, izmantojot un pilnveidojot publisko bibliotēku pakalpojumus bērniem un jauniešiem. Pētījums tika veikts ar mērķi, noskaidrot, 1) vai lasīšanas veicināšanas programma ir efektīva, 2) kā skolotājs var veicināt skolēnu darbošanos programmā. Raksta ietvaros tika atlasītas dažādas aktivitātes un sakārtotas atbilstoši jaunākā skolas vecuma skolēnu interesēm. Tās tika aprakstītas kā ārpusstundu darbs, mācību stundu daļa. Intervijās ar bērnu bibliotēku bibliotekāriem (n=4), tika noskaidrots, ka šajā vecumposmā skolēni skolotāju



uzskata par savu paraugu, tāpēc bieži vien seko skolotāja rādītajam piemēram. Ja skolotājs lasa un interesējas par uzdevumiem un aktivitātēm, tad arī skolēni interesēsies. Pētījums parādīja, ka lasīšanas veicināšanas programma ir efektīva, ja ir sadarbība starp skolēnu, skolotāju un bibliotekāru. Ar mērķtiecīgi atlasītu uzdevumu un aktivitāšu palīdzību tiek veicināta skolēnu interese par darbošanos „Bērnu un jauniešu žūrijā”, kā arī interese par grāmatu lasīšanu.

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## **PUPILS' EMOTIONS IN MATHEMATICS LESSONS IN THE PRIMARY SCHOOL**

*Keywords: emotions, mathematics, primary school.*

The article describes and analyzes theoretical and empirical materials about the pupils' basic emotions in the process of mathematics teaching/learning in the primary school. The aim of the article is to investigate the experienced emotions by pupils when learning mathematics in primary school and highlight the factors arousing emotions in learning mathematics in primary school. The article analyses the data obtained in empirical research on the emotions experienced by pupils during mathematics lessons in primary school. In questionnaires and semi-structured interviews pupils reveal what gave them pleasure and positive emotions in mathematics lessons, as well as what made them experience negative emotions. According to the analysis of empirical data we highlighted the factors of learning mathematics in primary school which caused positive emotions.

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## **MULTIDISCIPLINĀRĀ PIEEJA MATEMĀTIKAS UN MŪZIKAS SATURA APGUVĒ**

*Atslēgas vārdi: mūzika, matemātika, sākumskolas skolēni, multidisciplinārā pieeja*

Sākumskolas skolēni ir dažādi. Vieniem labāk padodas mācību priekšmeti, kas saistīti ar radošo darbību: mūzika, mājturība un tehnoloģijas, vizuālā māksla. Citiem – matemātika, kur nepieciešama loģiskā domāšana. Lai nodrošinātu visiem skolēniem pieejamu mācību procesu un ilgspējīgu attīstību, nepieciešams pārskatīt mācību priekšmetu saturu. Veidot pieeju, kurā skolēni vienā mācību priekšmetā apgūst kaut ko jaunu un citā nostiprina iegūtās zināšanas, veidojot prasmes un iemaņas. Tādā veidā iegūtās zināšanas tiktu saistītas ar reālo dzīvi, būtu skolēniem saprotamas un noderīgas. Pētījums tika veikts ar mērķi analizēt zinātnisko literatūru, lai noskaidrotu vai un kā iespējams izmantot multidisciplināro pieeju matemātikas un mūzikas mācību stundās. Pētījumā tika noskaidrots, ka šāda integrētā pieeja ļauj ievērot katra bērna individualitāti, kvalitatīvi veidot zināšanas un prasmes, attieksmi pret saviem sasniegumiem un notiekošo skolā, kā arī pašizvērtēt savas spējas.

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## **PIRMSSKOLAS VECUMA BĒRNU SAGATAVOŠANA MATEMĀTIKAS JĒDZIENU IZPRATNEI PĒC J.MENČA (SEN.) METODIKAS**

*Atslēgas vārdi: pirmsskolas vecuma bērni, jēdzieni, matemātika*

Matemātika daudziem skolēniem sagādā grūtības. Pagājušā gadsimta septiņdesmitajos gados J.Mencis(sen.) saskatīja, ka nepietiekami tiek izmantotas tās iespējas, kas bērniem paveras sakarā ar viņu agro garīgo attīstību, nav programmas nodarbībām pirmsskolā un skolas sagatavošanas klasē, pašplūsmā notiek bērna sagatavošana skolai mājās. Tāpēc J.Mencis(sen.) piedāvāja mācību raidījumus matemātikas priekšstatu veidošanai bērniem televīzijā, publicēja rakstus vecākiem un skolotājiem žurnālā „Skola un Ģimene”, kuros vienkāršā, bet zinātniskā valodā skaidroja, kā pirmsskolas vecuma bērnus sagatavot matemātikas jēdzienu izpratnei: 1) iepazīšanās ar kopām un attiecībām starp to elementiem, 2) attīstīt telpiskos priekšstatus, 3) iepazīstināt ar ģeometriskajām formām, 4) skaidrot skaitļu saskaitīšanu un atņemšanu, ciparu rakstību, 5) veidot prasmi pamatot vai noraidīt kādu apgalvojumu, no atsevišķiem vērojumiem izsecināt vispārinājumu, vingrināties dažādu elementāru, loģiska rakstura problēmu risināšanā. **Pētījuma mērķis** ir analizēt J.Menča(sen.) piedāvātā satura un metožu aktualitāti matemātikas priekšstatu veidošanā pirmsskolas vecuma bērniem. Pētījums parāda, ka J.Menča (sen.) pedagoģiskais mantojums ir uz ilgtspējību orientēta nacionālā bagātība, kas aprobēta jau vairākās paaudzēs un ir pamats tālākai attīstībai.

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## **SKOLĒNU LOĢISKAS DOMĀŠANAS ATTĪSTĪBA MATEMĀTIKAS STUNDĀS 3. KLASĒ**

*Atslēgas vārdi: sākumskolas vecuma bērni, loģiskā domāšana, matemātika.*

Mūsdienās cilvēki ikdienā sastopas ar problēmām, kuru risināšanai ir nepieciešama loģiskā domāšana. Valsts pārbaudes darbu rezultāti un starptautiskie pētījumi parāda, ka tikai nedaudzi skolēni spēj atrisināt uzdevumus, kuros ir nepieciešami nestandarta risinājumi, loģika. Kā mainīt šo situāciju? Kā palīdzēt skolēniem atrisināt šāda tipa uzdevumus pārbaudes darba un kļūt veiksmīgiem arī reālās dzīves problēmu risinātājiem? Lai meklētu atbildi uz šiem jautājumiem, tika veikts pētījums ar **mērķi** – zinātniski metodiskajā literatūrā izpētīt 3. klases skolēnu loģiskās domāšanas attīstības iespējas matemātikas stundās, mērķtiecīgi papildinot mācību saturu ar atlasītiem uzdevumiem. Teorētiskās un metodiskās literatūras izpētē tika savākti pierādījumi, ka loģiskā domāšana visstraujāk attīstās pirmsskolas un sākumskolas vecuma bērniem. Šajā laika posmā viņi sāk pētīt apkārtni, pievēršot uzmanību detaļām, izdalot būtiskākās pazīmes, nevis redzot kopējo ainu. Un tieši matemātikas uzdevumi palīdz ātrāk un pilnvērtīgāk attīstīt loģisko domāšanu. Raksta ietvaros tika atlasīti uzdevumi un sakārtoti atbilstoši 3.klasē apgūstamajām tēmām. Uzdevumi tika aprakstīti kā stundu konspektu daļa, kā spēles, kā patstāvīgas mācību stundas. Paredzam, ka mērķtiecīgi papildinot matemātikas mācību saturu, katru mācību stundu tiks veicināta skolēnu loģiskās domāšanas attīstība.

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## **ĀTRRAKSTĪŠANAS PRASMES 7.–9. KLAŠU SKOLĒNU KOGNITĪVO PROCESU PILNVEIDEI**

**Atslēgas vārdi:** ātrrakstīšana, prasmes, kognitīvie procesi, 7.–9. klašu skolēni.

Analizējot 21. gadsimta skolēniem nepieciešamo kompetenču klāstu, redzam, ka darbam skolā, mācību stundās un ārpus mācību procesa, svarīgas ir informācijas un komunikāciju tehnoloģijas (IKT). Pamatskolas mācību procesā arvien vairāk palielinās datoru izmantošanas iespējas, arvien jaunu informācijas tehnoloģiju pielietošana kļūst par skolēna mācīšanās procesa neatņemamu sastāvdaļu.

Palielinoties informācijas daudzumam, kas ir pieejams e-vidē un aktīvi ar to darbojoties, būtiski pieaug nepieciešamība skolēniem paaugstināt arī primārās informācijas ievadīšanas ātrumu jeb ātrrakstīšanas prasmes, strādājot ar datora klaviatūru. Rakstot ar roku, var ievadīt 100–150 zīmes minūtē, rakstot ar datoru, to var izdarīt divas trīs reizes ātrāk.

Apgūstot un pilnveidojot IKT prasmes, iespējams būtiski pilnveidot skolēnu kognitīvos procesus, prasmes strādājot ar informāciju. Pamatskolas informātikas mācību stundās būtu lietderīgi iemācīt skolēniem ātri un pareizi ievadīt informāciju datorā.

Pētījumā tiek izmantotas empīriskās datu vākšanas metodes – novērošana un aptauja. Aptaujāti tiek pamatskolas informātikas mācību priekšmetu skolotāji ar mērķi noskaidrot viedokļus par ātrrakstīšanas izmantošanu mācību procesā kognitīvo procesu pilnveidei, tās nozīmīgumu un pielietošanu/nepielietošanu informātikas stundās. Pētījumā tiek izmantota arī tiešā novērošana, kas sniedz iespēju fiksēt skolēnu rakstīšanas ātrumu katrā nodarbībā, kā arī palīdz izprast ātrrakstīšanas prasmes saistību ar kognitīvo procesu pilnveidi.

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## **INTEGRĒTIE KOMBINATORIKAS UZDEVUMI 4. KLASES SKOLĒNU MATEMĀTISKO PRASMJU ATTĪSTĪBAI**

**Atslēgas vārdi:** integrētie kombinatorikas uzdevumi, 4.klases skolēni, integrētā pieeja, pasakas.

Cilvēks ikdienas dzīvē visur saskaras ar matemātiku. Arī ar kombinatorikas uzdevumiem reālajā dzīvē ir jāsastopas bieži. Ik rītu pamostoties, pārdomājam, kādu apģērbu šodien vilksim, kādas brokastis, pusdienas ēdīsim, kādā veidā dosimies uz darbu, uz skolu. Tās ir situācijas, kad ir jāpārdomā visas iespējamās iespējas, lai pēc tam varētu izvēlēties pareizāko, piemērotāko no tām. Dzīvē un mācībās saskaramies ar uzdevumiem, kuru risināšanai tiek pielietotas zināšanas, prasmes, kas balstās uz pieredzi. Tomēr, kā liecina pētījumi, Latvijā ir maz skolēnu, kuri spēj atrisināt paaugstinātas grūtības uzdevumus. Arī 3.klases diagnosticējošā darba rezultātu analīze parāda, ka skolēniem sagādā grūtības matemātikas uzdevumi, kuros jāveic dažādu iespēju pārbaude, kur nav viena acīmredzama atrisinājuma. Šajā pētījumā tiek veidoti integrētie kombinatorikas uzdevumi 4.klases skolēniem. Tiek veidoti uzdevumi, kuru saturs ņemts no Margaritas Stārstes pasakām, jo pasakas palīdz skolēniem gūst priekšstatu par pasaules daudzveidību, par tajā notiekošajiem procesiem. Pasakas rosina iztēli un veido prasmes lietot matemātiskās sakarības un pamatjēdzienus ikdienas dzīvē. Integrētā pieeja nodrošina satura apguvi un zināšanu, prasmju nostiprināšanu nestandarta situācijās, respektējot skolēnu intereses. Pētījuma mērķis ir izveidot un aprobēt integrētos kombinatorikas uzdevumus un atbildēt uz jautājumu kā attīstās matemātiskās prasmes 4. klases skolēniem, izmantojot integrētos kombinatorikas uzdevumus. Pētījuma rezultāti parāda, ka piedāvātie uzdevumi palielina skolēnu interesi par matemātiku, veidojas nestandarta uzdevumus risināšanas prasmes. Tā kā matemātikā iegūtās zināšanas un prasmes tiek apgūtas, papildinātas arī otrā latviešu valodā. Skolēni mācās domāt plašāk, no cita redzes loka. Mūsu ikdiena nav iedomājama bez matemātikas, tāpēc svarīgi jau agrā bērnībā veicināt pozitīvu attieksmi pret šo mācību priekšmetu.

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## **5-6 GADU VECUMA BĒRNU PĒTNIECISKO PRASMJU ATTĪSTĪBA MĀCĪBU EKSKURSIJĀS DABĀ**

*Atslēgas vārdi: pētnieciskās prasmes, attīstība, mācību ekskursija, daba*

Pastāv vairākas mācību darba organizācijas formas bērnu pētniecisko prasmju attīstībā. Viena no tām ir mācību ekskursija, kurā bērni attīsta prasmes un zināšanas darbojoties praktiski. Tieši mācību ekskursijās dabā vislabāk iespējams attīstīt bērnu pētnieciskās prasmes un integrēt dažādu priekšmetu mācību saturu, jo pedagoģiskais process ir orientēts uz viņa darbību. Pētnieciskajās mācību ekskursijās dabā pilnveidojas ne vien pētnieciskās prasmes, bet arī saskarsmes, sociālās un runas attīstības prasmes. Pētījuma mērķis ir izpētīt 5-6 gadu vecuma bērnu pētniecisko prasmju attīstības iespējas mācību ekskursijās dabā. Tēmas kontekstā ir izstrādātas un aprobētas mācību ekskursijas dabā, piedāvāts metodiskais materiāls, ieteikumi ekskursijas organizēšanai, lai veicinātu bērnu pētniecisko prasmju attīstību.

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### **IZGLĪTĪBAS VIDE: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI**

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### **EDUCATIONAL ENVIRONMENT: EDUCATION FOR SUSTAINABLE DEVELOPMENT**

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### **HIGHLIGHTING THE VALUE PROTOTYPES OF MODERN YOUNG PEOPLE IN THE CONTEXT OF SUSTAINABLE EDUCATION AND DEVELOPMENT**

*Keywords: prototypes, sustainable education, young person, personality, values, paradigm, holism.*

Currently the society is dominated by the social and cultural aspects that make people believe they are the only stable element in their lives, since such elements as work, family and personal relationships have become unstable. The notion, that comes to the foreground is the one that of one's own special, unique, individual course of life, alternatives of choice, choices that have to be made, and consequences that may occur as a result of choosing a certain alternative. The new model of life is more dynamic. One is in need of a skill to deal with the unknown, the unpredictable, in addition to planning and organizing a person must be open to unexpected opportunities. Choice, future plans and intentions are based on values and opinions, outlining a course of sustainable development.

Seeking of young people's values becomes essential. The modern young person has found other, more topical goals corresponding with other value prototypes.

Along with the shift of paradigms, education conception and policy provide for a determined human's sphere of activity where the experience of humanity, society and an individual – knowledge, skills, attitudes and value-orientation in terms of the human him/herself, the human environment and nature – is particularly collected, maintained and distributed. In the aspect of this formulation education is an intellectual need, an action, the result of which may be expressed in the form of intellectual value. Education has to assist people in maintaining and developing attitude towards

values, intellectual values. The value-orientated approach is based on the principle of holistics. It embraces all the broad scope – from the highest objective intellectual values to actions of analytical nature. The overall process of upbringing and education will be value-oriented only in case if we can implement the principle of wholeness or holistics. And since each young person has own individual measure of this wholeness, the research of value prototypes is needed.

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## **NATURAL SCIENCE TEACHERS' ATTITUDE TOWARDS STUDENTS' RELIGIOUS FREEDOM**

**Keywords:** *student, natural science teacher, attitude, religious freedom, natural science subjects.*

The title of this paper is "Natural Science Teachers' Attitude towards Students' Religious Freedom". The objective of this work is to detect science teachers' attitude towards students' religious freedom. The theoretical part of this work includes analysis of scientific literature and legal documents of Republic of Latvia (The Constitution, The Law of Education, Holy See Contract with Republic of Latvia, Religious Organization Law and Children's Rights Protection Act), as well as the analysis of the global documents (Declaration of Human Rights and UN Children's Rights Convention). The practical part consists of an analysis of natural science teachers' interviews through attitude evaluation criteria based on theoretical part of this thesis. Collected data were used to develop recommendations for natural science teachers' on how to foster respect for the students' religious freedom in natural science classes.

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## **SKOLAS VIDE UN SKOLOTĀJU PAŠEFEKTIVITĀTE**

2014. gadā vienā no Latvijas lielajām pilsētām notika skolotāju aptauja, kuras mērķis bija atklāt tos skolas vides faktoros, kuri varētu ietekmēt skolotāju pašefektivitāti. Vienlaikus tika arī pētīts, kā skolotāji vērtē savas iespējas ietekmēt šos apstākļus. Iepriekš 2013. gadā šajās skolās tika veikta skolotāju pašefektivitātes un izdegšanas izpēte. Šajā rakstā ir abos pētījumos iegūto rezultātu apkopojums.

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## **FROM THE IDEA OF REVENGE TO RESTORATIVE JUSTICE. DELIBERATIONS CONCERNING THE REHABILITATION CHARACTER OF MEDIATION INSTITUTION IN THE WORK WITH SOCIALLY UN-ADAPTED YOUTH**

**Keywords:** *mediation institution, restorative justice.*

Mediation is not rehabilitation, it is neither therapy, consultancy, nor counselling. It does not replace the justice, neither is a panacea for crime. Mediation really means repairing all that is possible to be repaired but is such a degree which is the most appropriate for both parties. That is why, justice – defined as restorative justice – is its basis

The restorative justice, which is the aim of mediation, is totally different than revenge justice, carried out by the courts. During the judicial proceedings the human emotions and experience do not count, due to the fact that there is a need to judge, to decide who is guilty and who is not. Moreover, the victim is usually unimportant – the state has taken into role. The crime has been committed – so somebody has acted against the law being protected by the state. That is why, the state must take revenge on somebody who has dared to do it. The criminal has been punished, thus the justice should have been done. However, for the person on whom the crime has really been committed, imprisoning the criminal does not really settle the case. For this person it would be more satisfying if the criminal understood the harm they have done, felt responsible, felt pity and tried to compensate – and all this can be achieved through mediation.

The Polish law does not use the term of restorative justice. It appears only in one document – the Senate resolution concerning the criminal justice in Poland on 3<sup>rd</sup> June 2004, published in Polish Monitor of 2004, nr 26, pos. 431 – which recommends basing the criminal justice in Poland on the idea of restorative justice. Thus, in the act concerning the under-aged proceedings (the proceedings for under-aged are regulated by the Act on proceedings concerning under-aged 26<sup>th</sup> October 1982, Journal of Laws 2002, nr 11, pos. 109), there is no such a term either. However, some institutions can be taken into account in these proceedings, which carry out (or may carry out) the idea of restorative justice.

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## CONTEXT OF ENTREPRENEURSHIP EDUCATION IN LATVIA

Entrepreneurship education has recently become a hot research topic in Latvia. Latvia's researchers alone or working in international research teams have carried out their investigations on entrepreneurship education at different educational levels. However, the context of entrepreneurship education in Latvia has not been analysed. **The aim of the article** is to analyse the context of entrepreneurship education in Latvia underpinning elaboration of a hypothesis on provision of entrepreneurship education in Latvia. **The methods of the present article:** The present research involves a process of analysing the meaning of the key concepts *entrepreneurship* and *context*. Moreover, the study demonstrates how the key concepts are related to the idea of *entrepreneurship education*. **Respondents described in the present article:** six respondents at the seminar *Entrepreneurship Development: Challenges, Contradictions and Perspectives* organised by the State Education Development Agency, Riga, Latvia, December 3, 2014. The findings of the empirical study allow concluding that the respondents' views on entrepreneurship education in Latvia are heterogeneous. Directions of further studies are proposed.

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## HOUSEHOLD DEVICES IN PLACE OF COMPLEX DEVICES FOR EXPERIMENTS IN PHYSICS

To acquire researches skills by pupils, an important prerequisite are they own active involving in education process. In acquisition of physics there is significant importance for experiments. Physical experiment promotes more profound understanding of physical coincidence; contributes correct

image creation about processes and physical phenomena. Experiments create in pupils the interest about physics as an education subject and as a science.

The recess of scientific content in schools physics as an education subjects provides new requirements for physical experiments and to its methodology. To realize that, it is necessary for use of more complex, modern devices, the use of the latest experiences by demonstrating them in techniques and physical experiments methodology. However not all schools are provided with modern technologies, sensors, etc., as meaning that it is not possible to acquire the researches skills and the required skills according to standards. One of alternatives how to avoid this situation is to create experiments, laboratory works, researches, by basing on the devices – objects, that are available to all pupils and are often used in daily life. So by that creases the interest of pupils and motivation to develop in them an investigator, because the necessary materials for experiment for every pupil are available at their own home and are well known for pupils. Even if pupil is not attending at school for long time, he has an opportunity to do experiments at home. If pupil will be interested in learning physics by doing experiments at home, then in physics he will also feel as home. For every practising physicist the physics is home – place, were he feels the best.

There are developed and approved physical experiments with simple household devices that develops and improves researches skills and promotes “slow” thinking. Study has been made about efficiency of this kind of experiments and the results have been summarized. In this study took participation pupils from high school and from primary school. The results of study proves that with simple, in daily life often used devices, that are well known for pupils it is possible to reveal physical phenomena and by that show to the pupils, that it is possible to study the physical phenomena not only at school, but also at home.

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## **PEDAGOGICAL COMPETENCE OF CHORAL CONDUCTOR AND CONDITIONS OF ITS DEVELOPMENT**

***Keywords:*** *pedagogical competence, professional competence, choral conductor, choir, semi-structured interview, thematic analysis*

Nowadays the choral conductor's job in Latvia is essential and highly supported by its society. Both the voluminous appearance of new choirs and a particular stress on importance to maintain the tradition of Latvia Dance and Song Festival are in focus. The professional competence of a choral conductor includes knowledge, skills and experience in different fields, such as vocal, music theory, music pedagogy, history of music, ethics, music methodology, conducting, pedagogy, and psychology. However, namely pedagogical competence is particularly significant and rarely studied out of all these fields. The aim of this research is to define the content of choral conductor's pedagogical competence and principles of its development. The presentation will yield the answers on following questions emerged from the theoretical analysis: Do higher education provide their students with appropriate knowledge and skills necessary to mould a choral conductor's pedagogical competence? How the pedagogical competence of a choral conductor being formed during his/her professional work? What is a conductor more – an artist, who creates musical interpretation, or a teacher, who teaches his/her own interpretation of a music composition? Semi-structured interview was designed and conducted with three well-known Latvian choral conductors. The obtained data have been transcribed and analysed using the thematic data analysis method. The analysis suggested several themes showing the importance of higher education in initial development of choral conductor's pedagogical competence. Some themes discerned characterize gradual development of pedagogical competence in choral conductor's professional work, especially looking for an example of outstanding choral conductors. The results enable to conclude, that pedagogical competence may not be considered separately from the other aspects of choral conductor's professional competences – ideally a choral conductor should combine his/her pedagogical, artistic and management competences in a holistic entity.

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## STARPTAUTISKĀ PROJEKTA ETWINNING REGISTRĒTIE LIETOTĀJI NO LATVIJAS UN VIŅU AKTIVITĀTE PĒC REGISTRĒŠANĀS

*Atslēgas vārdi: starptautiskie projekti, eTwinning, skolotāju motivācija*

**Ievads.** 2004. gadā EK Lifelong Learning programmas ietvaros tika izveidota eTwinning apakšprogramma ar mērķi organizēt sadarbību starp Eiropas izglītības iestādēm, kopīgi realizējot projektus mācību procesa ietvaros ar IKT palīdzību. 2009. gadā tika uzsākts pētījums par Latvijas un citu Eiropas valstu skolu skolotāju motivāciju iesaistīties eTwinning projektā, tika apkopoti dati par Latvijas skolotājiem, kuri reģistrējušies portālā eTwinning līdz 2012. gada 31. decembrim. 2015. gada sākumā atkārtoti tika pētīti minētajā laika periodā (līdz 2012. gadam) reģistrēto lietotāju dati par iesaistīšanās projektā. **Darba mērķis.** Noskaidrot, kāda ir skolotāju aktivitāte pēc reģistrēšanās portālā eTwinning, kā tiek izmantotas portāla piedāvātās iespējas. **Materiāli un metodes.** Portāla eTwinning publiski pieejamo lietotāju profilu datu analīze (reģistrēšanās gads, veidotie projekti, iesaistīšanās cita lietotāja veidotajā projektā). **Rezultāti** rāda, ka skolotāji Latvijā aktīvi piedalās eTwinning Nacionālā Atbalsta dienesta rīkotajosursos un reģistrējas portālā, bet projektus veido maz. Lielākā daļa lietotāju profilu no projekta tiek dzēsti (ja lietotājs 2 gadus to nav apmeklējis).

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## ANALYZE OF JURIS UTĀNS ARTISTIC PEDAGOGICAL ACTIVITY

*Keywords: art science, contemporary art, artist, pedagogue, art study process*

The research includes science fields – pedagogy and art sciences and sub – sectors (art) pedagogy and plastic art history and theory context. The study aims to explore J. Utāns artistic pedagogy activities. Interdisciplinary analyzed Juris Utāns professional artistic activity in the pedagogical dimension – what are pedagogy – based criteria, key characteristics, pedagogue methods used to work with students and pedagogical innovations and knowledge into action. J. Utāns dual career reveals major aspects that are common and distinctive into artist and pedagogue action. Artistic dimension – the author's artwork analysis focuses on artist created artworks owned of the Latvian National Museum of Art Collection, Latvian Artists 'Union Collection, Mūkusalas art collections, foreign, private and author collection, showing the reasons for the students' art competence understanding improvement. An Art historian and artist interview justifies the pedagogical potential of artist artworks. The exhibition "Utāns paints and wins" aggregated student knowledge compilation and demonstrates the artist's characteristic embodiment into the works of art. Art history and criticism analyze J. Utāns artist's personality assessment into the history of art – from the seventies to the present day activity – creativity at full maturity. The artist's personal knowledge and non-verbal experience in pedagogy deal with the issue not rationally reflected. Nonverbal experience in the study process generates excitement, emotional spark, direct contact and links. Personal knowledge and nonverbal experience is the research theory reflective arguments and evidence.



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# IEKĻAUJOŠĀ PRAKSE: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## INCLUSIVE PRACTICE: EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### CREATIVE AFTERNOONS AND THEMATIC CLASS EVENINGS FOR DEVELOPING 5<sup>TH</sup> GRADERS' CREATIVITY

**Key words:** *creativity, 5<sup>th</sup> graders, thematic class evenings, creative afternoons.*

Peoples' creativity is the basis for all new-creations in the 21<sup>st</sup> century; it is the ruler of development and the "spiritual tool" in science, technology and other spheres, with the help of which people design for themselves a better future. Psychologists admit that creativity should be developed already in childhood and also at teenage age. Teenagers need self-realisation and raising self-esteem, which can be ensured by creative activity, informal environment and peer support. Accordingly, thematic class evenings and creative afternoons is a good solution for expressing and developing 5<sup>th</sup> graders' creative activity. The aim of this research is to establish what thematic evenings and creative afternoons are organised for 5<sup>th</sup> graders, as well as to evaluate contents of the organised thematic class evenings and creative afternoons in the contexts of creativity. The research was carried out at four education establishments of Latvia – secondary schools of Dagda and Ezernieki, elementary schools of Robežnieki and Asūne. During the course of the research five class teachers of the fifth form were interviewed and 40 5<sup>th</sup> graders were surveyed as well.

As a result of the research it was established that pupils' creativity is more often expressed during the creative afternoons organised at school, for example, celebrating traditional holidays, competitions, where pupils sing, dance, show theatrical performances and present self-composed creative works. Whereas during the thematic class evenings organised for 5<sup>th</sup> graders greater attention is paid to uniting the class collective and for creating the atmosphere, not for developing creativity. During class evenings creativity is expressed only when pupils invent themselves rules for games or dance steps, mostly during class evenings for pupils it is more important to sit at the feast table and communicate with their class-mates.

Thus it is possible to conclude that development of creativity could be promoted by engaging pupils in preparing creative afternoons and thematic class evenings and by supporting their initiative.

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### DIDACTIC MATERIALS TO IMPROVE SKILLS OF SOLVING CHEMISTRY PROBLEMS FOR DISLEXIC STUDENTS

According to studies OECD SSNP PISA, the level of reading skills in Latvia is lower than other OECD Member State. The reading skills do not mean only a mechanic letter fusion, but the most important – the reading comprehension.

Chemistry is acquired in primary school and it is very important for pupils to have stable functional understanding bases at this point. One of the methods that forms and develops the functional understanding is solving problems involving calculation tasks. If pupils capable successfully solve

chemistry problems and understand the importance of those in chemistry acquisition, it develops satisfaction from work performed as well as increases the interest and motivation in acquiring chemistry.

Pupils with poor reading skills have significant problems in full acquisition of education; because correct resolution of chemistry problems depends on one's ability to understand and interpret correctly conditions of the problem read. To resolve problems with calculation tasks, pupil must know well the language of chemistry. For dyslexic pupils with poor reading skills it is difficult to understand the conditions of the problems that they have read. The words that are included in problems should be changed and co-related with the physical quantities included in calculation formulas.

In attempt to resolve existing problem for dyslexic pupils with poor reading skills the methodical tool has been developed and methodical material for different chemistry problems trialled. The study executed in 2013–2015 involving 113 pupils from 8<sup>th</sup> and 9<sup>th</sup> grades.

The study results shows that pupils using the developed materials were able successfully resolve significantly more problems than those that didn't use developed materials. In this study developed materials were used in the early stages of chemistry subject acquisition as well as used during repetition of the subject in the subsequent year.

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## **EVALUATION OF THE CONTENTS INCLUDED IN FORM 4 LITERATURE TEXTBOOKS IN THE CONTEXT OF VALUE-BASED EDUCATION**

***Key words:*** *value-based education, contents learned at lessons of literature, textbook, values.*

Value awareness is the basis for sustainable development and growth of the society. However, sociological researches prove that in the 21<sup>st</sup> century in the society individualism and consumer mentality is increasing and many people are not able to find reference points for their values. Latvian National Commission for UNESCO indicates: in order to ensure sustainability of the society, it is necessary to integrate moral norms in the contents of education. In the National Standard for Elementary Education confirmed by the Cabinet of Ministers of Latvia as one of the objectives formation of the conception about moral and ethical values is put forward and value-based education is included in the contents of several school subjects during the stage of elementary education. Special attention in the context of value-based education should be paid to the teaching contents of literature, because literal works have a positive effect on forming pupils' value awareness. As the aim of the research evaluation of the contents included in Form 4 textbooks in the context of value-based education is put forward. By using content analysis, during the course of the research two Form 4 Literature textbooks were evaluated.

The data obtained in the research prove that in the contents included in literature textbooks the following values are often met: person and his/her personality, well-being of peers, work, virtue, honesty, life; whereas less attention is paid to patriotism, civic participation and respect, environment in sustainable development. Thus in general the contents included in literature textbooks are value-oriented and ensures formation of pupils' conception about values. However, in order to make values personally important for pupils, beside the contents included in textbooks a great importance has also the teacher's professional competence, that is to say, his/her knowledge about value-based education, skills to integrate it within the teaching process, as well as teacher's personal values and attitude.

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## **INCLUSION OF CHILDREN HAVING DIABETES MELLITUS IN THE FIRST CLASSES OF ELEMENTARY SCHOOL: STUDY OF PROBLEMS AND NECESSARY SUPPORT**

**Key words:** *children with diabetes mellitus, support for children with diabetes mellitus, inclusion of children having diabetes mellitus in the first classes of elementary school.*

In the world and also in Latvia, sickness rate of diabetes mellitus among children is increasing. According to the data of the International Diabetes Federation, every day 200 children are diagnosed with type 1 diabetes, but 78 000 children become ill every year. It means, that all over the world 440 000 children till the age of 14 daily are forced to get on with type 1 diabetes and more often children are diagnosed with type 2 diabetes. For children with diabetes mellitus it is difficult to adapt themselves to the class collective – very often the teacher does not want to bear responsibility, as a result negative attitude towards these children appears also from the side of their class-mates.

The aim of the research is to establish what problems children with diabetes mellitus face when adapting to collective of the first classes of elementary school, and what support is necessary for them. Semi-structured interview was used in the research to collect qualitative data. During the course of the research 10 parents of children with diabetes mellitus and endocrinologists, who daily work with children having diabetes mellitus, were interviewed.

According to the obtained data it is possible to conclude that teachers lack the knowledge on needs of children with diabetes mellitus and therefore they are afraid of this disease. The task of the teacher is not only to obtain the necessary knowledge about diabetes mellitus, but also to help children having diabetes mellitus and his/her peers to learn about this disease. It would help the child and his/her peers to understand how to act in particular to the manifestation of the disease related situations, as well as would allow children with diabetes mellitus feel understood and accepted, when they adapt to the class collective.

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## **KINDERGARTEN TEACHER JURIDICAL COMPETENCE**

**Keywords:** *competence, kindergarten teacher personality, preschool education, rights, responsibilities, laws.*

Nowadays, when informational society becomes to knowledge society which occurs social transformation to competence society. Progress of education in fundamental institutions to 2014–2020 year the emphasis is on democratic education area in present Europe.

For successful including in modern educational space, to accustom the new circumstances, it is important to kindergarten teacher to understand and recognize several aspects related to juridical regulations. It is important to identify teacher rights and responsibilities; to raise awareness about juridical basis, on which is based the work of educational institution; look through the rules, instructions, normative documents which regulates relationships between teacher and pupil, educational institution management, and parents. Emphasis is placed on the teacher's juridical competence, which includes knowledge and understanding about legislation, guidelines and educational progress in 21th century.

To understand the juridical competence of the nature and importance of preschool study process in the educational institution was updated and classified teachers' jurisdictions structure and content.

On the basis of the Education law, General education law to the preschool guidelines, children rights protecting act and other legislations in force, as the education institution is setting regulations and highlight responsibilities for teachers.

Important problems in researched topics are related to teachers working condition, responsibilities and in particular complexity of the obligations and differences with growing workload. Research is

emphasizing intersections (e.g. obligations should be long-termed, determine teachers' personal development, direction to the future, rights must be appropriate to the personality and needed to be operate in different life situations, etc.).

The data, which is given by the research, suggest that the concept implies the self-confidence as the personality, self-respect as high value perception, self-assessment of capabilities, skills, attitudes and values. The importance of this calibration is feedback and ready to navigate in new difficult situations.

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## **PRESCHOOL TEACHERS' PROFESSIONAL COMPETENCE DEVELOPMENT IN A KNOWLEDGE SOCIETY**

Educational process characteristic changes in the knowledge society and their impact on the teacher's professional competence. Encourages investigate whether contemporary teacher education and continuing education are able to provide his professional performance. In the current knowledge society the teacher must be able to transform their knowledge and practical skills. Research is dominated by pre-school teachers in the professional competence of its nature, content updating and development of assessment criteria. Society and its members, each individual's growth is characterized by the ability to change. (Keating 2005, OECD, 2001) So each person's development, improvement, increase of competence depends on his ability to transform into different situations, at different times. What kind of professional competence is developed in pre-school teacher to carry out their activities in a new, transformed form. Changes in the nature and theory of knowledge is new, volatile and unstable. (Ē. Ēriksons, Maslo) This will change the perception of the development of education. Is changing the teacher's formal position in the classroom and curriculum training that move in the plane of competencies that are required of the teacher so that he can transfer it to the child.

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## **THE EDUCATIONAL WORK OF DAY CLINIC NURSES WITH DIFFERENT AGE PATIENTS**

***Key words:*** *nursing theories, day clinic nurses, education, educational work, age, patients*

Securing relationships with economically developed counties in European Union, USA, Canada and Australia, it can be seen how the cooperation between patient and nurse differ.

After becoming acquainted with different nursing theories it can be understood that the accent in nurse's daily work is transferred to educating a patient, providing him with information and independent use of knowledge after the teaching, patient's health reinforcement or long-term preservation in a fixed position.

A nurse has to be educated in order to implement and reach goals in her work.

Understanding about nurse's pedagogical duties creates a need to study patient's attitude towards with nurse's help learned knowledge and its usage in connection with health and disease states.

Interferences in nurse's educational work:

- a) The lack of education of nurses and patients
- b) Patients' negative attitude towards new information
- c) When patients' previous experience and knowledge doesn't match the new data
- d) Negative mood of nurses and patients
- e) Resistance and non-acceptance of innovations

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## **BĒRNU AR DZIRDES TRAUCĒJUMIEM INTEGRĀCIJA PIRMSSKOLAS IZGLĪTĪBAS IESTĀDĒ**

*Atslēgas vārdi:* Bērns, dzirdes traucējums, integrācija, pirmsskolas izglītības iestāde

Pētījumā „Bērnu ar dzirdes traucējumiem integrācija pirmsskolas izglītības iestādē” ir apskatītas integrācijas mācību procesa problēmas pedagoģiski psiholoģiskajā aspektā. Darba mērķis ir izpētīt bērnu ar dzirdes traucējumiem veiksmīgas integrācijas nosacījumus pirmsskolas izglītības iestādē. Šajā darbā ir attēloti dažādi jēdzienu „integrācija” definējumi, integrēta mācību procesa mērķi un uzdevumi, raksturoti nosacījumi un integrācijas formas. Empīriskajā pētījumā veikta divu bērnu ar dzirdes traucējumiem integrēšanās un iekļaušanās analīze.

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## **THE EXPERIENCE OF THE IMPLEMENTATION OF INCLUSIVE EDUCATION TEACHERS COMPREHENSIVE SCHOOLS FOR CHILDREN WITH SPECIAL NEEDS**

*Key words:* inclusive education, special and specific needs, children, comprehensive school.

The question of children with special needs has become topical in recent years, both in society and in education. In order to ensure that each student the opportunity to educate him at an educational institution, the most qualified teachers must help. Inclusive education is the social model of education to ensure the formation of an inclusive society.

A study of the experience of teachers from comprehensive schools with children with special needs who intend to acquire, analyze, and summarize data, in order to be able to share materials and educators experience on various issues. The findings could be of use to teachers and school leaders, who want to establish an inclusive school, which is based on the principle of sustainability in implementation and enforcement.

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# KARJERAS ATBALSTS: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## CAREER SUPORT: EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### THE ANALYSES OF A QUALITY AND SUSTAINABILITY OF YOUTH INITIATIVE PROGRAMS IN KRĀSLAVA REGION

*Key words: youth programs, creativity, participation, quality of programmms.*

The aim of this study is to explore the quality and sustainability of youth initiative programs in Kraslava region. The study includes the analyses of how youth programs fit into a general EU and Latvia legislative framework in fostering creativity, youth participation, responsibility, and competitiveness. Particular emphases will be placed of the analyses of the content and outcomes and a variety of youth programs in fostering regional sustainability and competitiveness of youth. For the purpose of the study the authors chose the qualitative research methodology by the interviewing the leaders of youth programs and carrying out a questionnaire among the youth on gains in participating in youth programs. Youth initiative programs provide nurturing environments where youth can develop skills for developing creativity, building responsibility, supports youth participation in building a sustainable regional community.

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### EDUCATIONAL ASPECTS OF WORK WITH THE YOUNG FROM SOCIALISATION AND REHABILITATION INSTITUTIONS IN POLAND

*Key-words: rehabilitation, socialisation, under-aged*

The article presents selected aspects of work with the socially un-adapted under-aged from socialisation and rehabilitation institutions. Activities based on sport and evoking empathy – innovative rehabilitation method – are one of the recently developed methods. This method, developed and tested within the realisation of a project co-financed by the EU funds, turned out to be an effective model of educational work with the under-aged. The scientific basis for the model was the concept of Creative Rehabilitation of professor Marek Konopczyński. This scientist assumes that one of the most effective forms of work with socially un-adapted young people is searching and developing the potentials of the young.

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## **CAREER DEVELOPMENT PROCESS**

The author of the work researches the problem of the main factors affecting the career development process.

The aim:

1. To find out which general factors promote and which hinder the career development.
2. To define criteria, that would allow to measure, evaluate career progress or regress.

Career development is the lifelong process of study, work, leisure and self-improvement, which means, that career, the making career choices/decisions influences the individual life in general. By organizing his/her everyday, by acting or doing nothing a person promotes or hinders his/her career development, therefore it is very important to find out which general factors plays a key role in career development process and, most importantly, what people can and should do about it.

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## **THE OPPORTUNITIES FOR A CAREER CHOICE OF THE 9TH GRADE STUDENTS WITH SPECIAL NEEDS IN LATGALES REGION**

*Key words: youth with special needs, integration in a job market, sustainability of a region.*

The aim of this study is to analyse the opportunities provided for youth with special needs in Latgale region for a more successful integration in a job market as well as obstacles that hinder the integration. To reduce social exclusion, the society needs to be aware of the needs of those people, particularly, the needs of young graduates from schools for a better inclusion in the society and in a job market. A successful integration of those people in a job market will be a gain for the people and for the society in whole. This will influence the quality of life of people with special needs, starting with the health care to integration in a job market.

If people do not integrate in a job market and in the society in general, this causes socio economic consequences for the people themselves and the country in general by causing their dependency. The future of the sustainability of the country and the society to a large extent depends mainly of youth who choose their career and integrate in a job market. Successful integration of youth with special needs can contribute to their own well-being and the sustainability of the country. By the acquisition of necessary skills and education young people are being provided with an opportunity to become full pledged members of the society, to live a fulfilled and independent life by providing subsistence for themselves. The authors have used a qualitative research methodology by conducting interviews with the heads of the schools in Latgale region about the obstacles and good practice of integration of youth with special needs in a job market and by carrying out a deep analysis of legislation with the regards to inclusion of youth with special needs in a job market.

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## **CAREER EDUCATION SUPPORT MEASURES CURRICULAR ACTIVITIES, 8-9 CLASSES**

Create a guide "Consumables career education elementary realization 8th-9th classes".

Study results will be used Nautrenu high school curricular classes 8-9 classes. Survey was carried out on the need for a career in the education school, as well as students learn future intentions.

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## **JAUNIEŠU DZĪVES KVALITĀTE NOTEIKŠANA DAUGAVPILS PILSĒTĀ**

Pamatojoties uz Eiropas un Latvijas normatīvajiem dokumentiem, un domājot par jaunatnes dzīves kvalitātes uzlabošanu pašvaldībā tika aprēķināts jaunatnes dzīves kvalitātes indekss. Pētījuma piedalījās 400 Daugavpils pilsētas jaunieši. Pētījumā tiek iegūti dati 8 jaunatnei būtiskās dimensijas. Jaunatnes politikas indeksa aprēķināšana Daugavpils pašvaldībā ir solis jauniešu dzīves kvalitātes apzināšanai un vēlāk pilnveidošanai, tāpat arī veicot atkārtotu jaunatnes politikas indeksa aprēķināšanu būs iespējams izstrādāt konkrētākus risinājumus un veidus jaunatnes situācijas uzlabošanai.

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## **LATVIAN EMIGRATED YOUTH CAREER OPPORTUNITIES ABROAD**

**Key words:** *migration of youth, career opportunities abroad, career planning.*

Migration is a reality of a globalized society that covers social, economic, political and cultural aspects. Migration can be seen both as positive and as a negative process with all its consequences. The positive side of a migration is related to the improving demographics situation and a flow of a workforce from one country to another. The author analyzes causes of migration related to unemployment, economic situation in the country and other interrelated factors.

The study explores the possibilities of a career choice for youth abroad and the factors that influence the career choice of young people abroad. The author offers suggestions for a career choice for youth as well as suggestions for a career counselor in a career planning. The study reflects the analyses gained in the internet survey and individual life story interviews.



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## **LEGAL AND SOCIAL ASPECTS OF "LEGAL HIGHS" PHENOMENON AMONG YOUNG PEOPLE IN EUROPE**

*Key-words: legal highs, legal aspects, social aspect.*

The problem of legal highs, also called designer drugs, smarts or party pills, has been known to medical sciences since the 70-ties of the 20<sup>th</sup> century. However, since the very beginning of diagnosing this problem, there have been various legal regulations concerning smarts. The reasons for such a situation is rooted in national and cultural differences among the world countries. Till today in many regions of the world some substances, which are under strict legal control in Europe or the United States are used legally. The list of substances which have the same or similar psychophysical effects as drugs in Poland is constantly growing due to very rapid amendments introduced to the Act on Counteracting Addictions dating back to 2005.

It is worth mentioning that the phenomenon of production and distribution of designer drugs (also called smarts/ legal highs) appeared on the Polish scene of public life in August 2008 and was considered to be unprecedented. These drugs became legally available due to legal loopholes and the length of legislative processes. During just a few months hundreds of smart-shops appeared on the Polish market, flooding it with substances of such a chemical structure that it was hard to define it as illegal. All those substances considered separately were legal and did not bring risk to health, on the other hand, mixing these *legal* substances led to creating a molecular structure which was in reality similar to illicit drugs such as cocaine, MSMA or opium.

The authoress, presenting the above-mentioned aspects, is preparing to carry out scientific research concerning both the legal and social aspects of designer drugs abuse by the young people in selected European countries. That is why, the presented subject matter becomes an inherent part of her scientific inspirations.

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## **IZGLĪTĪBAS PRAKSE: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI**

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## **EDUCATION PRACTICE: EDUCATION FOR SUSTAINABLE DEVELOPMENT**

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## **EMPLOYERS, SPORTS AREAS AND NEW SPECIALISTS PERCEPTIONS OF PROFESSIONAL COMPETENCE STRUCTURE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT**

Sustainable education allows every person the opportunity to acquire the desired knowledge, values and skills that are indispensable to the decision-making process for individual or group activities at local and global level, the objective of improving the quality of life, threatening future generations. At the global level NGO Terms emphasizes the role of sustainability in all areas, as well as in sport. The aim of education for sustainable development in the interests of a person's upbringing with active citizenship can safely be a critical ponders that helps to evaluate the situation and predict the

consequences of one's activities. It is stressed that sustainable development is not a separate subject, but is an approach that integrates all the skills in the areas of competencies and values for the development. UNESCO is a driven society to change from the top down in training for basic education, which is linked to the desire for knowledge. The study is based on young people's professional competence building. The author has studied professional athletes, teachers, physical education teachers and young people. The study recruited professional athletes, teachers, physical education teachers and students, who are studying in the professional bachelor program "Teacher of sports". In order to demonstrate a professional competence establishment level, the employers that experts also took part in this study. The topic is very urgent, because young people who give up sport professionally, this is difficult to switch a profession. They feel that finally athletic career you cease the activity of the sport after the completion of the young people are often dissatisfied with their professional growth. For young people there is a conflict between the social role and its "ME" role. The existing problems need to be solved in the sustainability context.

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## **DIAGNOSTICĒJOŠO DARBU MATEMĀTIKĀ 3. KLASEI REZULTĀTU 2014. UN 2015. GADA SALĪDZINOŠĀ ANALĪZE**

***Atslēgas vārdi:*** *diagnosticējošie darbi, matemātika, matemātiskā kompetence*

Skolēnu matemātiskā kompetence pamatskolā veidojas jau pirmajos skolas gados, kad tiek apgūtas prasmes četru darbību izpildei galvā. 3.klasi beidzot skolēniem veidojas arī sākotnējās problēmrisināšanas prasmes un izpratne par ģeometriskajiem jēdzieniem, lielumiem un to mērvienību pārveidojumiem. Rakstā tiks analizētas kopīgās tendences Latvijā pēc 2014.un 2015. gada diagnosticējošo darbu rezultātiem matemātikā 3.klasē un sniegti ieteikumi metodiskā darba pilnveidei.

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## **DIDACTIC GAMES FOR THE ENRICHMENT AND ACTIVATION OF VOCABULARY FOR 4-5 YEAR-OLD CHILDREN**

Nowadays active vocabulary of children is reduced because speaking and reading is replaced with modern technology products. Direct communication of children remains passive and the ability to engage in play with other children decreases, thereby hindering the formation of connected speech and in further development of a child there appear problems in acquiring new information and learning.

Therefore the hypothesis is as follows: if a dialectic and emotional management of didactic games is organised, there is a possibility to effectively enrich and activate the vocabulary of 4-5 year-old children.

Therefore the aim of the research is to investigate the possibilities of 4-5 year-old children vocabulary enrichment and activation.

The theoretical information has been analyzed and didactic games have been selected; in the first stage of the research the pedagogical observation of the group of 4-5 year-old children was carried out during which, after applying the speech diagnostic method, the participants for the second stage of the research were selected. Furthermore selected didactic games for the enrichment and activation of the vocabulary were offered.

During the research the selected didactic games were successfully validated. In interpreting the results it can be asserted that while playing games children felt safe and willing to participate. Using the dialectical approach and encouraging positive emotional background children's interest was created, which contributed to the enrichment of the active vocabulary of the 4-5 year-old children and activated their passive vocabulary.

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## **VIDUSSKOLĒNU PAŠAUDZINĀŠANAS DISKURSA IZKOPŠANA LATVIEŠU VALODAS STUNDĀS**

Pašaudzināšana ir vidusskolēna personības iespēja veidot sevi, sabalsojot savu pasaules redzējumu ar kultūras kontekstu. Lai veidotu situāciju, kurā varētu realizēties pašaudzināšanas diskurss, tiek aktualizēts priekšstats par dzīves mākslas aspektu – pašrūpēm un to iespējamo aktualizāciju latviešu valodas stundās, veidojot precīzu izteikumu.

Vidusskolēns veido savu pašaudzināšanas diskursu apzināti izvēloties valodas līdzekļus, kas tiek aktualizēti skolēna verbālajā pašrealizācijā, veidojot saikni ar noteiktu kultūras tradīciju.

21. gadsimta skolā audzināšanas un pašaudzināšanas procesā ir vērojama problēma, kura sakņojas mūsdienu sabiedrības heterogēnajā iedabā: no vienas puses, tiek aktualizēts patērētāju sabiedrības diskurss, ko veido klišejas; no otras puses, tiek pieprasīts oriģināls atšķirīgs izteikums kā personības atspoguļojums. Līdz ar to rodas jautājumi:

– *Kādas vidusskolēna pašaudzināšanas diskursa īpatnības tiek aktualizētas latviešu valodas stundās?*

– *Kā latviešu valodas stundās veidot vidi, kurā varētu tikt izkopts vidusskolēnu pašaudzināšanas diskurss?*

Raksta mērķis ir noteikt vidusskolēna pašaudzināšanas diskursa īpatnības, kas tiek aktualizētas latviešu valodas stundās.

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## **JAUNO SKOLOTĀJU IEKĻAUŠANĀS SKOLAS VIDĒ**

Jaunie pedagogi un viņu iekļaušanās skolas vidē ir aktuāla tēma Latvijā. Darbā tika izpētīta pedagoģijas programmu studentu – absolventu – profesionālās darbības uzsākšana – iekļaušanās skolas vidē. Lai darbs tiktu sekmīgi veikts, tika analizēta jauno skolotāju sagatavotība darbam izglītības iestādē, kas tika panākts, anketējot jaunos skolotājus un dažādu skolu mācību pārziņus. Tika apzināti jauno skolotāju izaicinājumi un atbalsts skolas iekšējā vidē, kā arī kompetenču raksturojums, kas palīdzēja sekmīgāk izdarīt secinājumus un ieteikumus pedagoģijas studiju programmu uzlabošanai un jauno skolotāju kvalitatīvai ienākšanai skolas dzīvē.

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## **PEDAGOGA EMOCIONĀLĀS INTELIĢENCES IETEKME UZ MĀCĪBU SASNIEGUMIEM**

Referāta mērķis ir izpētīt skolotāja emocionālās inteliģences ietekmi uz skolēnu sasniegumiem. Tēmas aktualitāte tiek pamatota ar to, ka pretstatā intelektuālajam koeficientam, kas ir stabils un klasisks psiholoģijas termins, emocionālā inteliģence joprojām ir nepilnīga un pieprasa zinātnieku uzmanību teorijas izstrādei. Referātā tiek pētīta emocionālā inteliģence un iespējas to attīstīt. Darbā tiek pētīta arī mācību vides ietekme uz skolēnu mācību sasniegumiem, jo mācību vidi galvenokārt rada pedagogs. Referāta beigās tiek izvirzīti ieteikumi pedagogiem un skolu vadītājiem pedagogu atlasē.

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## **COOPERATION-ORIENTED DIRECTOR'S COMPETENCE FOR DEVELOPMENT OF INSTITUTION OF VOCATIONAL MUSIC EDUCATION**

*Keywords: cooperation, competence, educational management, school leadership, development*

The role of the cooperation has increased in last years and has become very important in educational field because of its impact to many processes of the school's internal and external environment. Cooperation can make the difference between success and failure.

According to Tony Bush, Professor of Educational Leadership at Nottingham, school aims are strongly influenced by pressures from the external environment, and particularly from the expectations of government, often expressed through legislation or formal policy statements. Schools may be left with the residual task of interpreting external imperatives rather than determining aims on the basis of their own assessment of learner needs.

Educational leadership and management has progressed from being a new field dependent upon ideas developed in other settings to become an established discipline with its own theories and significant empirical data testing their validity in education. This transition has been accompanied by lively argument about the extent to which education should be regarded as simply another field for the application of general principles of leadership and management, or should be seen as a separate discipline with its own body of knowledge. (Bush, 2010)

Cooperation is not always an easy thing to achieve, but is worth the effort because it leads to a more harmonious and productive operation.

The main object for the research is the cooperation-oriented director's competence for the development of institution of vocational music education. The aim of this paper is to study and analyze cooperation-oriented director's competence for development of institution of vocational music education. To achieve the aim the previous research and scientific literature were studied.

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## **VESELĪGA DZĪVESVEIDA VEICINĀŠANAS UN INTEGRĒŠANAS RAKSTURĪGĀKĀS IEZĪMES UN IESPĒJAMIE DARBĪBAS VIRZIENI NEFORMĀLAJĀ MĀCĪBU VIDĒ AGLONAS NOVADĀ**

*Atslēgas vārdi: veselīgs dzīvesveids, neformālā mācību vide, jaunieši, fiziskās aktivitātes, Aglonas novads*

Jaunāko tehnoloģiju ienākšana mūsu ikdienā samazina fizisko piepūli, bet palielinās psiholoģiskā piepūle. Ne tikai Latvijā, bet arī Eiropā palielinās gan bērnu, gan pieaugušo cilvēku skaits, kuriem ir dažādas veselības problēmas, no kurām visizplatītākās ir liekais svars un stājas traucējumi, kas laika gaitā izraisa smagas saslimšanas. Cīnoties ar šīm problēmām ir svarīgi zināt par veselīgo dzīvesveidu, kas sevī iekļauj trīs būtiskās lietas – veselīgu, sabalansētu uzturu, aktīvu dzīvesveidu un sportošanu, kā arī prasmi izvairīties no stresa situācijām.

Tā kā jaunieši no 7–25 gadiem pārsvarā laiku pavada mācību iestādē, sporta nodarbības tiek piedāvātas maksimums divas līdz trīs reizes nedēļā, ir jādama par pieejamu fizisko nodarbību piedāvāšanu ārpuskolas izglītībā. Fiziskai slodzei ir nenoliedzama nozīme, jo tā ir efektīvs veids, kā saglabāt savu veselību, jo tā sniedz enerģiju, uzlabo muskuļu spēku un izturību, līdz ar to regulē un uzlabo vispārējo organisma veselības stāvokli. Regulāras fiziskās aktivitātes stimulē arī bērnu garīgo attīstību, veicina augšanas procesus, veidojas teicama pašciņa un fiziskā kondīcija, kas kopumā samazina stresa negatīvās izpausmes, uzlabo pašdisciplīnu, un veicina akadēmiskos sasniegumus (sekmes) skolā.

Ar šo pētījumu autors vēlas atspoguļot situāciju, kāda attieksme pret veselīgu dzīvesveidu ir Aglonas novadā. Pētījums balstās uz teorētiskās literatūras apkopošanu un analīzi, kā arī apkopotajiem anketu rezultātiem.

Pētījuma mērķis ir izpētīt, kā tiek veicināts un integrēts veselīgs dzīvesveids neformālajā mācību vidē Aglonas novadā.

Pētījuma gaitā tiks noskaidrots, kādas ir veselīga dzīvesveida veicināšanas un integrēšanas raksturīgākās iezīmes un iespējamie darbības virzieni neformālajā mācību vidē Aglonas novadā.

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## PERSONĪBAS POTENCIĀLS: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## POTENTIAL FOR A PERSON: EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### PRIMARY SCHOOL CAREERS EDUCATION

It is frequently argued that work relating to key areas of pupils' personal and social education starts too late, that it takes place after crucial attitudes, perceptions and understandings have already been developed by pupils.

My written work is about the career's work with pupils in a primary school.

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### THE QUALITY OF STUDENTS EDUCATION DEPENDING ON THE INFLUENCE OF ART TEACHER'S PERSONALITY IN THE SUSTAINABLE DEVELOPMENT EDUCATION

This article examines the quality of students education depending on the influence of art teacher's personality in the sustainable development education. It is analyzed the arts teacher's inspirational personal characteristics, activities system, methods and techniques, which are required and are necessary for the teacher's inspiration personality. We examined operational aspects, such as imaginative, flexible thinking, creative being, mental state of self-regulation, the ability to attract and keep pupil's attention, expression, emotion, nonverbal communications, improvisation skills, and educational tools. As a result, it is important to examine practically and theoretically what an inspiring art teacher sees through his own and his students' eyes.

In this work we examine an art teachers characteristics – the concept of inspiration from teachers, such as Johanas Heinrichas Pestalocis, Vasilijus Suchomlinskis, Virgilijus Noreika, Shinichi Suzuki. Research work has been done on the basis of the justification for the phenomenological strategy humanistic education paradigm. The data collection method – semi-structured interviews was used in the research. We interviewed 8 Arts teachers of Visaginas and 32 pupils. The effect of the inspiring art teacher learning motivation enhancement was analyzed.

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## **THE PROMOTION OF ENTERPRENEURIAL AND SUSCEPTIBILITY SKILLS IN THE PUPILS' ENTERPRISES INTO THE EAST LATVIAN CREATIVE SERVICES CENTRE „ZEIMUĻS”**

The development of entrepreneurial and susceptibility skill has become one of today's most important problems as in Latvia, as well as in Europe, especially today, when in the world, there is economic crisis, in which individuals, as well as many countries must find solutions in the rapid changes or in the conditions of uncertainty.

The ability to operate and to dare this talent into own business can be a key to the success of well-being. Management skills, which is essential to build and develop from an early age – in the family and later at school, is the basis for successful entrepreneurship. A good owner will be able to create and successfully manage the Pupils Enterprise, later to succeed his firm. And the experience gained will allow to manage national or international corporations.

JA-YE Latvia has found a good solution how to involve Latvian students into business, how to promote their initiative by persuading not be afraid daring and starting to act.

In the scientific research there will be explored the management, entrepreneurial and susceptibility skills of pupils, business circle in the East Latvian creative services centre „Zeimuļs”.

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## **INDIVIDUAL PECULIARITIES OF PERSONALITY AND EXPRESSIONS OF HARMONY IN WORK AND COMPATIBILITY OF HEADS OF COMPREHENSIVE SCHOOLS OF LATGALE REGION FROM THE POINT OF VIEW OF SUSTAINABLE DEVELOPMENT OF EDUCATION**

Harmony in work within the body of school and development of sustainability in education depends on the interaction peculiarities of heads of schools with their subordinates. In the present study the expressions of harmony in work and compatibility within a body of school depending on individual peculiarities of personality of heads of comprehensive schools in Latgale region are being studied in the context of the sustainability of education.

The following methods were used in the research: Eysenck Personality Inventory (EPI) and “Harmony in work and compatibility of teaching staff” by N. Obozov. As a result, it was found that 16% of heads of schools are typical extroverts and 15% are introverts. 69% of respondents' answers are within the interval of “ambivalent” group.

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Heads of schools with “excellent” and “good” level of harmony in work have higher indicators of compatibility if compared to indicators of groups of respondents. Heads of school with “satisfactory” and “weak” indicators compatibility have a low level of harmony in work. In total, a “good” level of harmony in work is characteristic to 47% of heads of schools and 38% have “satisfactory” level of compatibility.

It was found, that for introverts the indicated “satisfactory” level of harmony in work is higher in comparison with extroverts. The “ambivalent” group of respondents evaluated the level of harmony in work as “excellent”.

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## **PERSONAL MATURITY DYNAMICS OF YOUNG PEOPLE**

***Keywords:*** *personal maturity, young age, personal growth, emotional intelligence, relationship quality, a sense of responsibility.*

The research of personal maturity and its contributing factors is one of the leading themes in modern psychological literature, it shows that this issue is topical. Personal maturity is the base of many life areas: education, person's satisfaction with themselves and their quality of life, ability to install and achieve goals, self-realization, career opportunities, useful and thought-out leisure time, communicative competence, the ability to form close and intimate interpersonal relationships, and also as important happy marriage life's part.

During developing the concept of personal maturity different scientists (Ананьев, 2007; Журавлев, 2007; Русалов, 2006; Божович, 2008; Олпорт, 2002; Sternberg, 2005; Staudinger, 2000; Маслоу, 1997; Роджерс, 1994; Фромм, 2006; Хорни, 2008 etc.) releases its various components (social, psychological, personal, intellectual, emotional, communicative, moral, professional, motivation, etc.), which can also be seen as it forms. The analysis of scientific literature shows that there isn't any uniform understanding of the concept of maturity in psychology. G.Allport (Олпорт, 2002) supposed that it is difficult to describe the absolute unity of the mature personality and its certain diversity. There are as much types of development as the developing persons, and each case of personal development is unique.

There are several components of personal maturity divided in the given research: strong identity, activity, adequate perception and emotional intelligence, the ability to form close relationships, sense of responsibility, intellectual skills, consciousness and understanding the meaning and aim of life, autonomy and integrative component that unite all the previous ones, and that is included in each of them.

The aim of given research is to study personal maturity dynamics and personal growth possibilities of young people.

As methodological tools will be used self-assessment scales, Personal differential technique, self-effectiveness scales and training activities.

The research questions were addressed to the creation of personal growth and development program for young people, making the comparative analysis of the received data in study group in the beginning of the program and in the end, assessing the effectiveness of trainings. The personal growth program based on the principles of freedom, autonomy, equality and mutual cooperation

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## **DYNAMICS OF PHYSICAL ACTIVITY AND SPORT MOTIVATION OF YOUTH IN THE CONTEXT OF SUSTAINABILITY**

The present study examines the relationship of physical activity and the dynamics of sports motivation of boys and adolescents in the context of education's sustainable development. The educational process includes different opportunities to increase youth physical and sport activity: sports clubs and gyms. Sport activities are often reduced to the fact that trainer / sports teacher explains and demonstrates the performance of sport elements, and the youth only must be disciplined, diligent and accurate in performance. An important component of sustainable development of physical and sport activity of young people is a hierarchy of motives in the structure of motivation of boys and adolescents to perform sport activities. Independent training sessions are one of the factors that is increasing physical and sport activity and dynamics of motives in the structure of motivation. In the structure of the motivation of young people-students, the first ranking places are occupied by the motive of avoiding failures. For adolescents, the leading motive is process, while for boys of school age – the motive of prestige. The relationship between age and motives in the structure of motivation is fixed: for older age group the motive of prosperity and content is dominant.

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## **THE MISCONCEPTIONS AND WORKING STEREOTYPES OF CHILDREN, THEIR PARENTS AND TEACHERS REGARDING THE PROFESSIONAL COMPETENCE AND ROLE OF EDUCATIONAL PSYCHOLOGISTS WITHIN THE SCHOOL SYSTEM**

Educational psychologists have great potential for advisory assistance in working with students in the school setting regarding both personal and educational matters. This role however is not initially evident because of the ignorance of students, their parents and teachers about the professional competence of Educational Psychologists. Conceptions of the Educational Psychologists training are often stereotyped, and that prevents students and their parents from turning to them for advisory help with personal problems solving.

Is there a relationship between the self-evaluation of professional competence of educational psychologists, that of their employers and the conception of the students, their parents and teachers regarding the effectiveness of the educational psychologists?

In a push to further the profession there must be a push to research the general level of professional competencies of Educational psychologists and the views of their students, parents and teachers regarding the work of Educational Psychologists. Likewise, to actualize and popularize the work of the Educational Psychologists, inform students as well as their parents and teachers regarding the potential for greatness in working with professionals such as educational psychologists.

In order to solve the problems at hand quantitative and qualitative research methods were utilized; such as the Educational Psychologists' professional competence questionnaire (N.Matyas, E.Feshenko) and various interviews on the topic "My conceptions on the work of the psychologist" which were conducted among students, their parents and teachers.

A majority of educational psychologists rated their general level of professional competence as average, some – above the average. Employers generally assess the overall level of professional competence of educational psychologists as average and above average. Interviews of the students, their parents and teachers indicate a strong inclination towards stereotypes in the perception of the



work of educational psychologists: high expectations of one group of respondents and negative expectations from contact with the psychologist of another group of respondents.

The results of research showed an average level of professional competence of Educational Psychologists. Expert evaluation of employers showed their overall contentment with the work of Educational psychologists. No fixed relationship was evident between the desires of students to seek advisory help from an Educational psychologist and his or her professional competence was found.

Professional competence; stereotypes; educational psychologists.

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## **EMOTIONAL SELF-REGULATION DIFFICULTIES IN CHILDREN WITH BEHAVIOURAL ISSUES**

Mainstream schools are attended by children with various behavioural difficulties; both parents and teachers seek the help of a psychologist in order to learn how to deal with these issues. The psychologist must then attempt to minimise a child's behavioural issues, using available methods and techniques. Sandplay therapy has now established itself as a reliable and popular high-quality working tool of psychologists.

Therefore, research thesis is as follows: It is possible to minimise behavioural issues of social origin in children by way of combining sandplay therapy method and explanatory efforts in the areas of child development and education with the parents of the child.

As such, the aim of this research is to explore the possibilities of minimising behavioural issues in primary age children, using the development of emotional self-regulation skills.

The following methods were used in the beginning and conclusion of research: child's behavioural assessment forms from experts – one or both parents and the child's designated teacher, as well as the methodology in assessing the child's emotional background. Sandplay method, as well as conversations with the child and the parents were used in the consultation process.

At the end of the consultation process, which involves constant mutual feedback between the parents, child and the psychologist, as well as use of the sandplay method, the frequency of displays of behavioural issues has decreased and the child has learned to control his/her emotions in a better way.

The fundamental conclusions of the research are as follows: during psychological consultation, it is possible to minimise behavioural issues of social origin in primary age children, using sandplay therapy and mutual feedback between the psychologist, child and the child's parents. However, the frequency of displays of behavioural issues may not decrease if the parents are not involved in the consultation process.

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# RADOŠA PIEEJA: IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## CREATIVE APPROACH: EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### VOCAL CORDS DEVELOPMENT IN SINGING LEARNING FOR TEENAGERS AFTER MUTATION PERIOD

Mutation period is hard period, when vocal cords is growing and all human nature's changing. But what we shall do next? What step would be next? Is it rehabilitation period for singer? I am a vocal music teacher and i have experience in this questions. Of course, we need to have a solution for these problems, when we have collide them face to face. I have delve in this topic, made decision, study and work with it everyday. Vocal learning bows medicine, sport and other sciences. Write singing demands properly supplied breathing – if there's no this main factor, there's no stable singing. Are here other problems? How we could develop our students vocal cords? How they could write overcome mutation period and establish themselves in new "reborning" period?

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### HOLISTISKĀ PIEEJA MUZIKĀLĀS KULTŪRAS VĒRTĪBU APGUVĒ – LATVIJAS UN STARPTAUTISKĀS PIEREDZES ANALĪZE

Pētījuma tēmas aktualitāti veido mūsdienu izglītības globālās tendences, kas norāda uz nepieciešamību veidot līdzsvarotu vispārējās izglītības sistēmu ilgtspējīgas izglītības kontekstā. Pamatizglītības programmas standartā un normatīvajos dokumentos ir uzsvērtā vispārējās izglītības plašuma un kultūrvērtību apguves nozīme, orientējoties uz integrētību un ilgtspējīgu attīstību. Mūsdienās par holistisko perspektīvu raksta vairāki pētnieki kā ārvalstīs (*Kessler, 2000; Schreiner, 2005; Bundsgaard & Hansen, 2011 un citi*), tā arī Latvijā (*Sīle, 2000; Iliško, 2005; Grabovska, 2006; Salite, 2009 un citi*), pamatojot tās nepieciešamību ilgtspējīgas sabiedrības izveidošanai. Pētījuma problēmu nosaka tas, ka dažreiz skolēni ar grūtībām izprot dažus mācību vielas teorētiskos aspektus vai neprot tos praktiski izmantot pamatskolā mācību priekšmetā „Mūzika”. Daudzi mūzikas pedagogi atzīst, ka pamatzglītībā joprojām jārisina vairāki jautājumi: kā veiksmīgāk vai interesantāk organizēt skolēnu muzikāli radošo darbību mācību stundās; vai ir iespējams strukturēt, organizēt un plānot mācību procesu, lai veidotu, attīstītu un saglabātu skolēniem pozitīvu attieksmi pret muzikālās kultūras vērtībām, lai mūzikas stundai ir pievērsta pietiekama uzmanība gan no pamatzglītības skolotāju, gan skolēnu puses. Pamatojoties uz pētījumiem un holisma pārstāvju atzinumiem, raksta autore teorētiski un empīriski pamato, ka holistiskajā pieejā balstīta muzikālās kultūras vērtību apguve paredz muzikālās kultūras vērtību dziļāku izpratni, atbildīgu attieksmi, cieņu pret tām un kultūras mantojumu kopumā ilgtspējīgas attīstības kontekstā. Pētījuma mērķis ir izpētīt Latvijas un starptautisko pieredzi par holistisko pieeju muzikālās kultūras vērtību apgūvē pamatskolā. Pētījuma datu ieguves metode: intervija. Pētījuma izlase: kopumā pētījumā piedalījās 56 pamatzglītības skolotāji no dažādu Lielbritānijas pilsētu pamatskolām (N=20) un no dažādu Latvijas reģionu pilsētu un lauku pamatskolām (N=36). Pētījums tiek veidots, izmantojot jauktā pētījuma metodoloģiju un integrējot kvalitatīvo un kvantitatīvo pētījumu.

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## **HIGH LEVEL OF SUBJECTIVE WELL-BEING HELPS THE STUDENT TO REALIZE THEIR PERSONAL POTENTIAL IN BUILDING A FUTURE CAREER**

**Keywords:** *subjective well-being, career orientation, self-determination in adolescence, career guidance.*

The high level of subjective well-being among students in 12 classes of self-determination, and a reduced level of subjective well-being of pupils of professional school in connection with the relevance and awareness of their own choice in his career.

High level of subjective well-being helps the student to realize their personal potential in building a future career. In which groups the level of subjective well-being will be higher? Which component of subjective well-being will be more topical in the period of youth at school and vocational school students? What career installation based school students and vocational school students in choosing a career, with different levels of subjective well-being?

To study the level of subjective well-being and what orientation in future career will rely students in 12 classes and vocational school students.

Theoretical analysis of the literature on subjective well-being, career orientations of students and pupils vocational schools. Technique of subjective well-being K.Riff (adapted Voitkane & Miezite 2001). Technique career orientations Shane. Data processing programs used spss.

Uptrend subjective well-being is manifested in students graduating classes of secondary schools.

School students in secondary schools and freshmen of vocational schools when choosing a career focused on stability, and place of residence; entrepreneurship; professional competence.

During the period of youth identified the following relevant components of subjective well-being: self-acceptance, personal growth and autonomy.

It could be argued that subjective well-being as an integrative and meaningful experience that affects the mental state of the individual and as a consequence of the success in career choices and productive activities.

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## **REMEDIAL WORK WITH INTELLECTUALLY PASSIVE 1<sup>ST</sup> GRADERS AT SCHOOL**

**Keywords:** *Intellectual passivity, learning difficulties, remedial work.*

One of the most important problems in educational establishments is a steadily poor academic progress of pupils which is difficult to overcome. Intellectual passivity is one of the reasons of learning difficulties. Intellectually passive pupils, who do not receive help in the right time, are more likely to achieve poor academic results.

Remedial work with intellectually passive children started in the right time, noticeably diminishes learning difficulties and improves pupils' integration into the learning process.

The aim of the paper is to research ways of intellectual passivity, its expression and causes, to work out and to appropiate the curriculum of remedial work.

Comparative and theoretical analysis of literature; diagnostic work: adopted express-diagnostic methodology of intellectual capability (ISEDm) (DU, 2012), experts' assessment (Sokolovs, Chirkovs, 1991); mathematic-statistical data processing and qualitative analysis of data.

The research describes the ways of intellectual passivity, its main expression, the curriculum of remedial work has been worked out.

Workshops with intellectually passive pupils were organized and pupils were researched.

The research showed that the cause of students' intellectual passivity is based on lack of cognitive activity in the families.

Activities conducted with intellectually passive children improve children's cognitive activity. Intellectual passivity can be divided into four groups. This classification is important in working out the curriculum of remedial work. It is vital to start remedial work as early as possible. Parenting techniques used in the family are important cause of childrens' intellectual passivity. Active parents' participation plays an important role in remedial work. Intensive remedial work can increase pupils' intellectual activity.

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## **REMEDIAL WORK PROGRAM FOR OVERCOMING SOCIAL NEGLECT OF YOUNG PEOPLE FOR SUSTAINABLE DEVELOPMENT**

An important condition for sustainable development of education is also helping young people with deviant behaviour. Such a group is often called a "risk" group, in which also young people with signs of social neglect can be included: such young people have difficulties both with people around, and with themselves. The main feature of social neglect is uncoordinated attitude towards norms of behaviour in society and teenager's attitude towards them. Socially neglected behaviour contradicts the legal and moral norms accepted by the society. In order to reduce and prevent the social neglect, it is necessary to study the features and levels of behaviour expressions of socially neglected young people.

In the research, the symptomatic method of observation "complex proximate diagnostics of the state of the socially neglect" (R.Ovcharova) was used.

It was established that socially neglected young people were influenced by negative asocial groups of peers. This fact gives proof, that the young person is pushed aside by the family and the positive educating guidance of the school. With socially neglected young people, inadequate self-assessment and level of complaints, as well as low activity of interaction, was recorded. It is possible to state, that social neglect is being promoted by results of authoritarian upbringing and hyper-tutorial attitude from the family. Different levels of social neglect were established at the level of statistical significance. On the basis of the conducted research results, intervention measures are offered and remedial program for work with socially neglected young people for sustainable development is elaborated.

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## **JAUNIEŠU KARJERAS ATTĪSTĪBA UN IZGLĪTĪBAS IESPĒJAS IESAISTOTIES PROGRAMMAS „JAUNIEŠU GARANTIJAS” ATBALSTA PASĀKUMĀ „DARBNĪCAS JAUNIEŠIEM”**

Latvijā, pēdējos gados, vērojama ekonomiskās situācijas uzlabošanās, kas pozitīvi ietekmē arī darba tirgu. Līdz ar to pieaug nodarbinātība un mazinās krīzes izraisītais augstais bezdarba līmenis. Savukārt atsevišķas iedzīvotāju grupas, personas ar zemu izglītības līmeni un kvalifikāciju, jo īpaši jaunieši situācijas uzlabošanā izjūt vismazāk. Tā ir viena no visneaizsargātākajām sabiedrības grupām, kas ir pakļauta sociālas atstumtības riskam, kuriem viens no galvenajiem bezdarba iestāšanās riskiem ir nepieciešamās darba pieredzes trūkums.

Nākotne lielā mērā atkarīga no tiem jauniešiem, kas mācās, apgūst profesiju, uzsāk vai drīzumā uzsāks savu darba karjeru. Jaunatne uzskatāma par 21. gadsimta darbaspēka potenciālu. Iekļaušanās darba tirgū nav vienkārša, tā ir sarežģītāka nekā pirms desmit vai divdesmit gadiem. No vienas puses, bieži dzirdēts – jaunatnei visi ceļi vaļā. No otras puses, jauniešiem ir mazāka drošība, nav garantijas par kvalifikāciju, par iespējamo darbu.

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- 2) style and compliance of key words and summary with the content of manuscript;
- 3) compliance with conventions for publication.

## Sample

# IMPROVEMENT OF QUALITATIVE RURAL LIVING ENVIRONMENT IN LATVIA IN LEADER PROGRAM FRAMES

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## Abstract

**Improvement of qualitative rural living environment in Latvia in LEADER program frames**

Key Words:

.....

**Kvalitatīvas lauku dzīves vides uzlabošana Latvijā LEADER programmas ietvaros**

Atslēgvārdi:

Kopsavilkuma teksts .....

Body text.....

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