SCIENTIX
The community for science education in Europe

Scientix, the community for science education in Europe

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WEBINARJI SCIENTIX NA-MA 2018

Aktivnosti s Scientix NA-MA izobraževalnimi lističi

Vir: https://mariborinfo.com/tags/zima?page=0%2C0%2C2

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Kaj je novega v skupnosti Scientix?

NOVICE

PREBRSKAJ NOVICE

Filtriraj s

Država ▼ | Tema

Jezik ▼

CALL FOR PROPOSALS FOR THE INTERNATIONAL LUMAT SYMPOSIUM 2019

26.11.2018

Država:
Finska

Tema:
Uporabne znanosti, Znanost o materialih, Matematika, Tehnologija, Pedagogika, Projekt, Dogodek, Drugo

Ciljne skupine:
izobraževalni organi, oblikovalci politike, raziskovalci, učitelji, učiteljski pripravniki, univerzitetni docenti, drugo

Current and prospective teachers of mathematics, science and technology subjects at all levels of education, teacher educators and researchers, developers and other experts, are invited to submit proposals for the International LUMAT Symposium in 2019. The deadline for submitting proposals is 31 January 2019.

The International LUMAT Symposium is held in Jyväskylä, Finland, from 5 to 6 June 2019. This year, it is dedicated to discussions about the future of work, research and education in the context of mathematics, science and technology education. In that context, the symposium is built around research and practice in those areas of education.

The International StarT Gala 2019 ceremony is organised during this conference, in which good educational initiatives in Finland and across the world are awarded. This ceremony is organised as part of the international StarT project community.

Visit the Web page of the symposium for more information here: https://www.luma.fi/en/lumat-2019/

https://www.luma.fi/en/lumat-2019/

Novice

Raziskava: Pedagoška praksa na področju naravoslovja, tehnologije, inženirstva in matematike

ALL YOU NEED TO KNOW ABOUT THE 3RD SCIENTIX CONFERENCE

20.11.2018

Country:
Belgium

Topic:
Aeronautics, Anthropology, Archaeology, Astronautics, Astronomy, Agriculture, Applied sciences, Biochemistry, Biology, Biomedicine, Biotechnology, Computer science, Chemistry, Earth science, Ecology, Electronics, Energy, Engineering, Environmental sciences, Fisheries science,

Scientix has just published a brand-new booklet summarising all the activities that took place at the 3rd Scientix Conference, including keynote speeches, presentations and talks, workshops, round tables, awards, public outreach and other relevant information. Complementary to this publication are six video interviews recorded at the conference.

The conference featured 20 exhibition stands, 25 poster sessions, 56 presentations and 14 workshops, in addition to six round table discussions of various national and European initiatives in Science, Technology, Engineering and Mathematics (STEM) education, selected from 324 proposals submitted for the conference in an open call.

This edition of the conference brought together of 352 participants from 39 different countries, including 32 policy makers, 13 representatives of Teacher Training Institutions, 92 representatives of STEM organisations, 49 researchers, 12 industry representatives and 160 teachers.

In addition to this new conference booklet, Scientix has also published six video interviews with key stakeholders in STEM education and uploaded presentations from the conference to a dedicated Web page.

STEM EDUCATION POLICIES IN EUROPE OCTOBER 2018

This report is based on data gathered from sector experts. A survey was sent to STEM representatives from 14 European countries with questions on the place of STEM in the education system, the reform projects linked to STEM education, the situation regarding the professional capacity-building of STEM teachers and the development of specific pedagogical and learning resources. The structure of the report reflects that of the survey. The data collected was enriched with interviews with industry and university representatives to obtain feedback and points of view from the field.

DOWNLOAD THIS PUBLICATION HERE

STEM EDUCATION PRACTICES IN EUROPE DECEMBER 2018

In December 2018, Scientix will publish here the results of a large-scale European survey on teaching and learning practices in STEM education.

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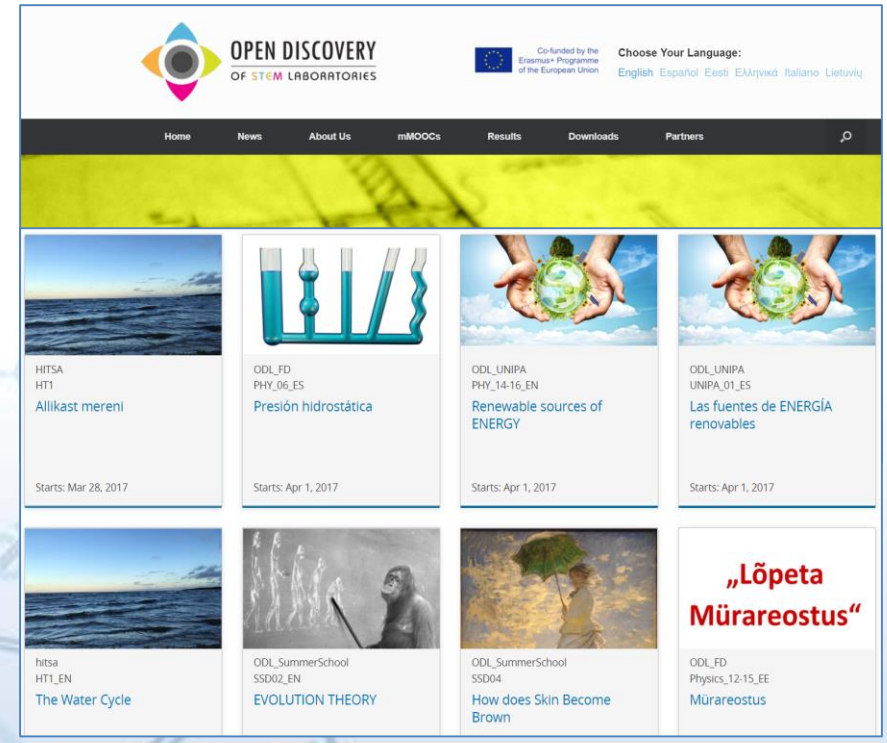
Še nekaj novih projektov



SCIENTIX

DRONETEAM - MAKING AND DESIGNING A TOY DRONE THROUGH MULTIDISCIPLINARY COLLABORATIVE WORK

Share this project

BASIC INFORMATION | RESEARCH INFORMATION | TEACHER INFORMATION

This is the age of drones. But do people really know how a drone works, what components it has and what additional components can be assembled to make it more advanced? All of this is important in order to train students for the future because this sector is expected to have an impact in the years to come.

DroneTeam is a project funded by Key Action 2 of the Erasmus+ programme of the European Union for the period of three years. The project brings together teachers and students in Vocational Education and Training (VET) with various knowledge and a shared global vision to develop professionally. The project's consortium is composed of four schools in VET and AIJU, the Technological Institute for children's products and leisure in Spain. The partners are working on the development of practices at the four partnering schools, which add synergies and are supported by the Technological Institute, resulting in high-quality Open Educational Resources (OER). Moreover, this project brings many added benefits since it follows the same steps that are needed in the development of a real and innovative product. Thus, the outcomes of the DroneTeam project can help students develop basic and transversal skills in multidisciplinary teams.

Drones are sparking a new wave of ideas and innovation among teachers. Making use of this trend, DroneTeam aims at inspiring and empowering students with new skills that are required in this new digital age. It is a new way to draw students towards subjects in Science, Technology, Engineering and Mathematics (STEM). A drone is a powerful tool for the teacher because it demands creativity and motivation from the students. Students can work on assignments related to design, 3D printing, motors, electronics and electricity, batteries, the environment, mechanics, aerodynamics, meteorology, coding and communications, photography and videography and security, as well as developing their vocabulary in English and other languages.

Home › Projects › NEWTON - Networked labs for training in sciences and technologies

NEWTON - NETWORKED LABS FOR TRAINING IN SCIENCES AND TECHNOLOGIES

Share this project

BASIC INFORMATION | RESEARCH INFORMATION | TEACHER INFORMATION

NEWTON is a large-scale project, funded by the Horizon 2020 framework of the European Union for research and innovation. The project's aim is to design, develop and deploy innovative solutions in Technology Enhanced Learning (TEL). Content in Science, Technology, Engineering and Mathematics (STEM) is stored on the project's management platform (NEWTELP) and validated across Europe at primary, secondary and tertiary institutions.

The NEWTON project, which is funded by the Horizon 2020 framework of the European Union for research and innovation, is composed by thirteen partners from seven countries in Europe, led by Dublin City University. The project's aim is to design, develop and deploy innovative solutions in Technology Enhanced Learning (TEL), such as adaptive multimedia and multi-sensorial content delivery mechanisms, personalisation and gamification solutions, Virtual Labs and Fabrication Labs, Augmented and Virtual Reality, as well as innovative pedagogical approaches, including problem-based, game-based and flipped-classroom-based learning.

Those solutions, developed as part of the NEWTON project, are employed on the project's technology enhanced learning platform NEWTELP. This platform is used by teachers for creating course content and both knowledge and qualitative assessment. Students use the platform primarily to learn from the course materials and to complete various knowledge tests and questionnaires.

NEWTELP is based on a multi-tier client-server architecture that separates business logic, client access technology and centrally held data into discrete layers, which nevertheless communicate with one another through open interfaces. This supports both the platform's scalability and the sharing of recent innovations, such as components for novel gamification, adaptation and personalisation of learning processes.

Vabljeni k obisku spletnih strani Scientix!

WEBINARJI SCIENTIX NA-MA 2018

Aktivnosti s Scientix NA-MA izobraževalnimi lističi

SCIENTIX
The community for science education in Europe

Zavod Republike Slovenije za šolstvo

Predstavitev…

Zasnova in didaktična uporaba izobraževalnih lističev

Prva stran IL:

→ *osnovne informacije o skupnosti za naravoslovno izobraževanje Scientix*
→ *opredelitev sklopa, v katerega spada IL ter*
→ kratka predstavitev (teoretskih) izhodišč in konteksta aktivnosti, prikazanih na drugi strani IL

Druga stran IL:

→ neposredno namenjena aktivnosti otrok/učencev/dijakov pri pouku in širše

Predvidena uporaba:

→ vsak IL samostojno, za cel razred
→ lahko pa tudi kot zbirka IL (mapa) za učitelje več naravoslovnih predmetov, naravoslovja itd.

Vsi IL, dodatni didaktčni napotki in informacije so/bodo objavljeni v sodelov@lnici NA-MA na **http://url.sio.si/nN7**

Druga serija IL Scientix NA-MA prinaša naslednje naslove:

NA-MA eksperimenti:

- IL Razlikujmo čiste snovi in zmesi (mag. Andreja Bačnik)
- IL Raziskujmo vpliv taljenja ledu na velikost sile vzgona (Jaka Banko)
- IL Preučimo premo enakomerno gibanje (Milenko Stiplovšek)
- IL Z mobilnim telefonom raziskujmo zvok (Goran Bezjak)

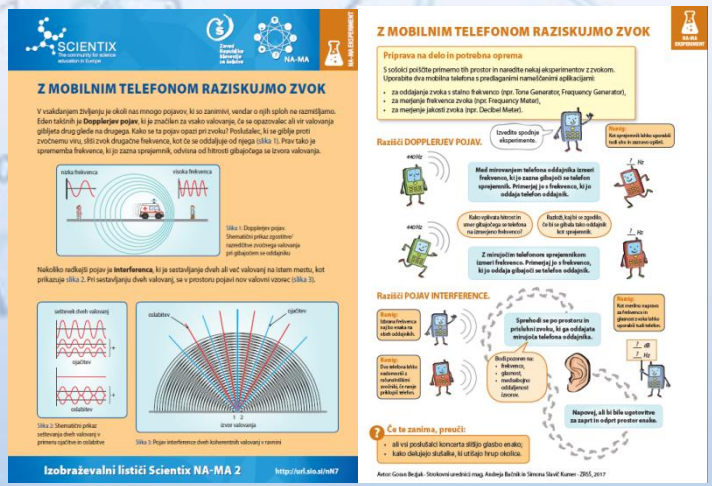
NA-MA dejavnosti:

- IL Kamnine in minerali – Katere lastnosti skrivajo? (Bernarda Moravec)
- IL Izdelajmo modelni prikaz zgradbe in podvojevanja DNA (Simona Slavič Kumer in Saša Kregar)
- IL Preučimo označevanje živil (Irena Simčič)
- IL Primerjajmo dve športni dejavnosti glede na hitrost in agilnost (Nives Markun Puhan)
- IL Raziskujmo zvok steklenic (dr. Leonida Novak in dr. Sandra Mršnik)
- IL Raziskujmo zvok trobente (dr. Leonida Novak in dr. Sandra Mršnik)
- IL Pretvarjajmo merske enote (Vesna Vršič)
- IL Primerjajmo in razvrstimo štirikotnike (mag. Melita Gorše Pihler)
- IL Preiskujmo v Pascalovem trikotniku (mag. Sonja Rajh)
- IL Preiskujmo v Leibnizevem trikotniku (mag. Sonja Rajh)
- Priloga za IL Preiskovanje v Pascalovem in Leibnizevem trikotniku (mag. Sonja Rajh)
- IL Premikanje mravlje z algoritmom (mag. Radovan Krajnc in dr. Matej Črepinšek)

2. serija IL

Dosegljivi na

http://url.sio.si/nN7



Primer IL 2

Zavod Republike Slovenije za šolstvo

NA-MA

SCIENTIX
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Izobraževalni lističi Scientix NA-MA 2

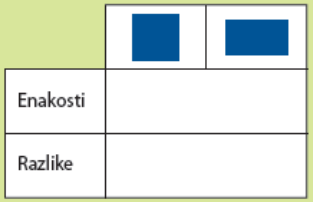
Scientix, the community for science education in Europe

WEBINARJI SCIENTIX NA-MA 2018

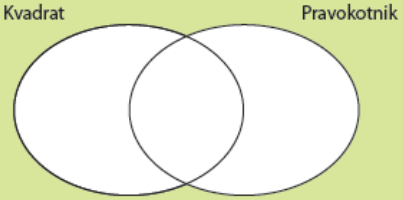
Primerjajmo in razvrstimo štirikotnike

PRIMERJAJMO IN RAZVRSTIMO ŠTIRIKOTNIKE

Štirikotnike primerjamo glede na njihove lastnosti. Pri primerjanju lastnosti štirikotnikov nam je lahko v pomoč primerjalna shema (slika 1) ali Vennov diagram (slika 2).



Slika 1: Primerjalna shema



Slika 2: Vennov diagram

Definicija matematičnega pojma ne vsebuje vseh lastnosti pojma. Pojem lahko definiramo tako, da zapišemo najbližji »rojstni pojem« in navedemo lastnosti, ki so nujne in med seboj neodvisne. Glede na lastnosti, ki karakterizirajo skupino likov, razvrščamo štirikotnike.

Primer

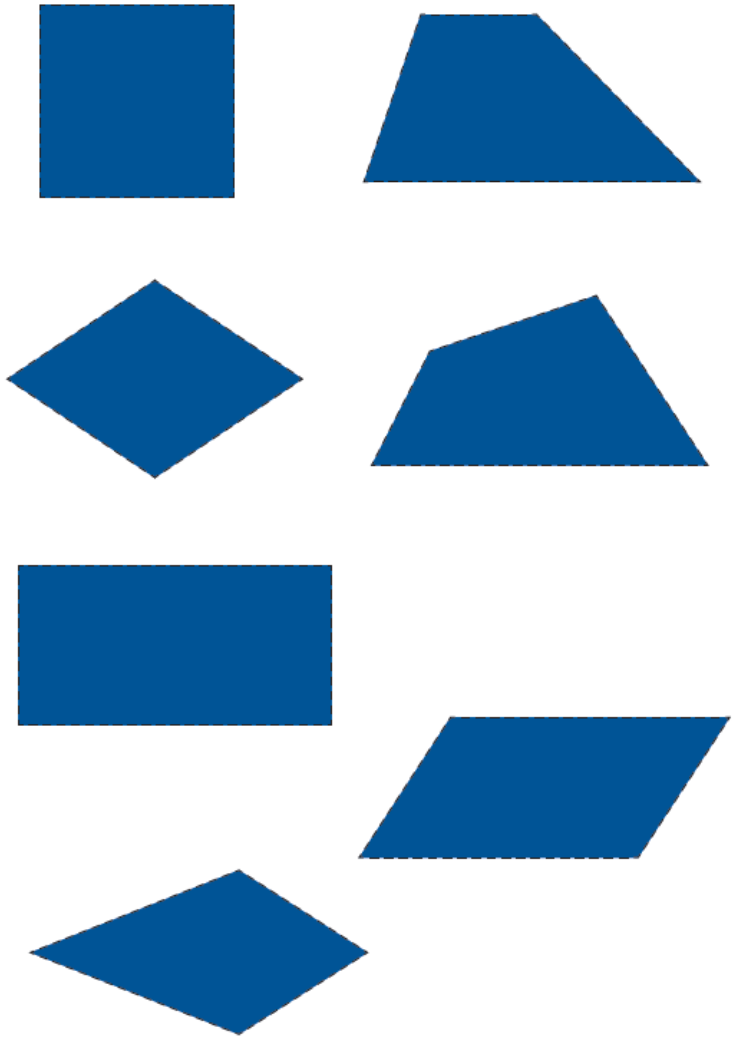
Lastnosti kvadrata so: nasprotni stranici sta vzporedni, vse stranice so skladne, vsi notranji koti so pravi, diagonali sta skladni, diagonali se sekata pravokotno …

Najbližja »rojstna pojma« za kvadrat sta pravokotnik in romb. Tako lahko kvadrat definiramo »Kvadrat je pravokotnik, ki ima vse stranice skladne« ali »Kvadrat je romb, ki ima vse notranje kote prave« ...

Aktivnost primerjanja in razvrščanja štirikotnikov nam pomaga preiti iz opisne ravni na raven neformalnega ali celo formalnega sklepanja (tvorjenje matematičnih definicij je primer formalnega sklepanja).

Izreži

NA-MA DEJAVNOSTI



PRIMERJAJMO IN RAZVRSTIMO ŠTIRIKOTNIKE

NA-MA DEJAVNOSTI

Primerjaj štirikotnike

1. Modela kvadrata in pravokotnika postavi na ustrezni mesti v primerjalni shemi. Primerjaj lika. Zapiši enake lastnosti in lastnosti, po katerih se kvadrat in pravokotnik razlikujeta.

	Lik 1	Lik 2
ENAKOSTI		
RAZLIKE		

2. Namesto kvadrata in pravokotnika izberi modela drugih dveh štirikotnikov. Primerjaj ju. Svoje ugotovitve predstavi sošolcu.

Razvrščaj štirikotnike

Danih je šest nalog. Pri vsaki nalogi izberi ustrezne modele likov.

1. Med danimi modeli štirikotnikov izberi vse modele **kvadrata**.
2. Med danimi modeli štirikotnikov izberi vse modele **pravokotnika**.
3. Med danimi modeli štirikotnikov izberi vse modele **romba**.
4. Med danimi modeli štirikotnikov izberi vse modele **paralelograma**.
5. Med danimi modeli štirikotnikov izberi vse modele **trapeza**.
6. Med danimi modeli štirikotnikov izberi vse modele **deltoida**.

S sošolcem preverita, ali se vajini izbiri ujemata. Če se vajini izbiri razlikujeta, drug drugemu utemeljita vsak svojo rešitev in ugotovita, katera rešitev je pravilna.

Avtorica: mag. Melita Gorše Pihler · Strokovni urednici: mag. Andreja Bačnik in Simona Slavič Kumer · ZRSŠ, 2017

Ciljna skupina:

- učenci 7., 8. in 9. razreda,
- del aktivnosti za učence 4., 5. in 6. razreda.

Predviden čas:

1-2 šolski uri.

Priloga 2: Delovni list

	Lik 1	Lik 2
ENAKOSTI		
RAZLIKE		

Dopolni povedi. Izbiraj med pojmi: kvadrat, pravokotnik, romb, paralelogram, trapez, deltoid. Zapiši vse možnosti.

Vsak kvadrat je _____.

Vsak pravokotnik je _____.

Vsak romb je _____.

Vsak paralelogram je _____.

Vsak trapez je _____.

Vsak deltoid je _____.

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Dopolni poved.

Kvadrat je pravokotnik, ki _____.

Za sošolca sestavi dve podobni nalogi. Sošolec naj sestavi dve podobni nalogi zate. Po reševanju drug drugemu preverita pravilnost in podajta povratno informacijo.

Nalogi, ki ju je zate sestavil tvoj sošolec:

Povratna informacija:

Dopolni poved.

Paralelogram je pravokotnik, če _____.

Za sošolca sestavi dve podobni nalogi. Sošolec naj sestavi dve podobni nalogi zate. Po reševanju drug drugemu preverita pravilnost in podajta povratno informacijo.

Nalogi, ki ju je zate sestavil tvoj sošolec:

Povratna informacija:

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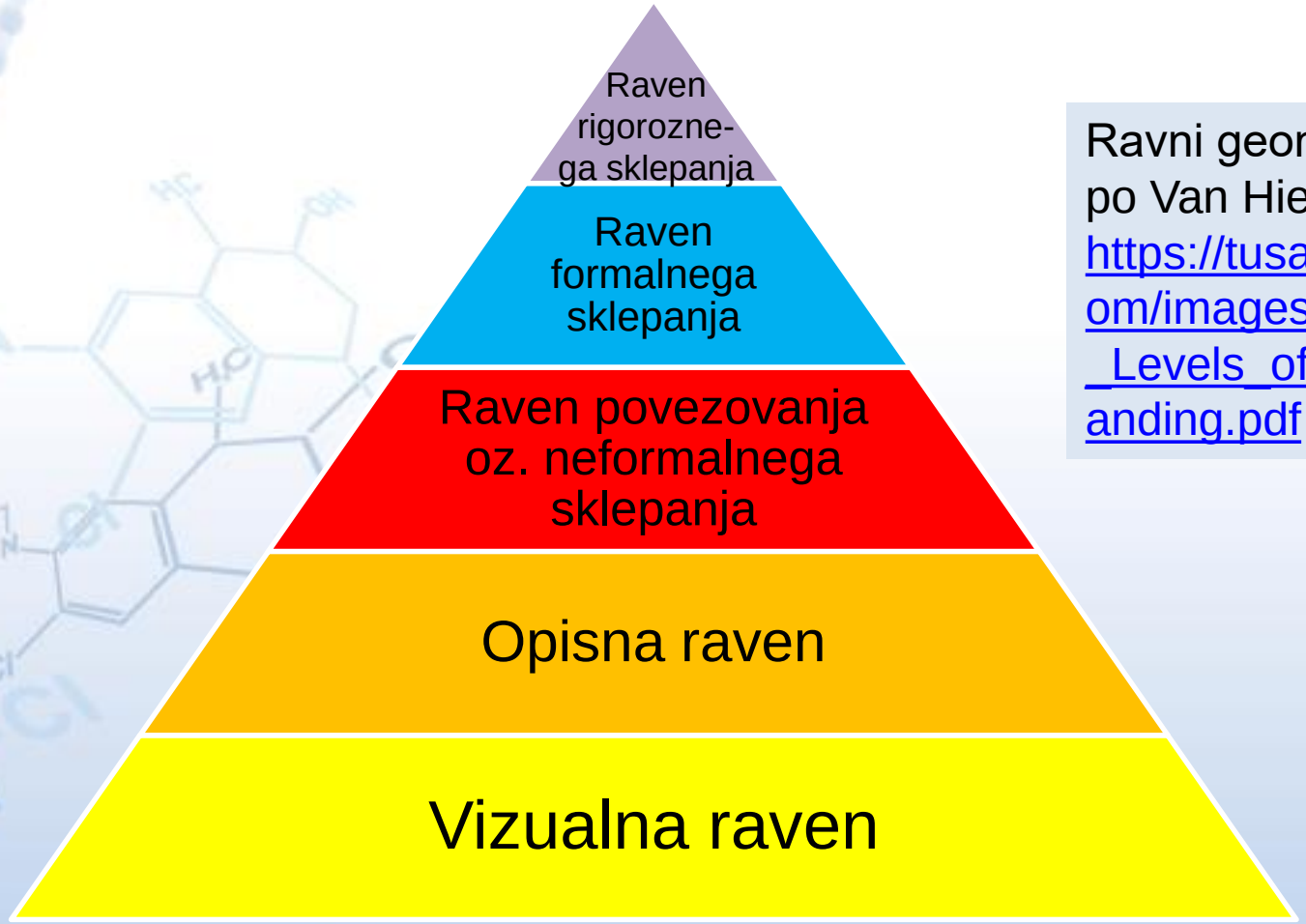
Prehajanje na višje ravni geometrijskega mišljenja



Ravni geometrijskega mišljenja po Van Hieleju: https://tusach.thuvienkhoahoc.com/images/e/eb/The_van_Hiele_Levels_of_Geometric_Understanding.pdf

Razvoj ciljev

Učenci:

- primerjajo like,
- razvrščajo like glede na izbrano lastnost,
- izbirajo neodvisne lastnosti likov,
- ločijo med opisom in definicijo lika,
- oblikujejo definicije likov,
- razvijajo spretnost sodelovalnega učenja in odgovornost za skupne cilje …

Potrebno predznanje

Učenec zna:

- opazovati in izluščiti matematične lastnosti,
- izbrati kriterije primerjanja in razvrščanja,
- uporabljati sheme za razvrščanje.

Učenec pozna pojme:

- oglišče, stranica, diagonala,
- skladnost, vzporednost, pravokotnost,
- štirikotnik, kvadrat, pravokotnik, romb, paralelogram, trapez in deltoid.

Po korakih …

1. Koliko mačk je na sliki?
2. Primerjajmo štirikotnike
3. Tvorimo definicije štirikotnikov
4. Razvrščajmo štirikotnike




Vir slik: https://www.flaticon.com/free-icon/animal-paw-print_64431

Po korakih …

1. Koliko mačk je na sliki?
2. Primerjajmo štirikotnike
3. Tvorimo definicije štirikotnikov
4. Razvrščajmo štirikotnike




Vir slik: https://www.flaticon.com/free-icon/animal-paw-print_64431

Koliko mačk je na sliki?

Vir slike: http://www.tigers-world.com/bengal-tiger/

Poiščite podoben primer.

Po korakih …

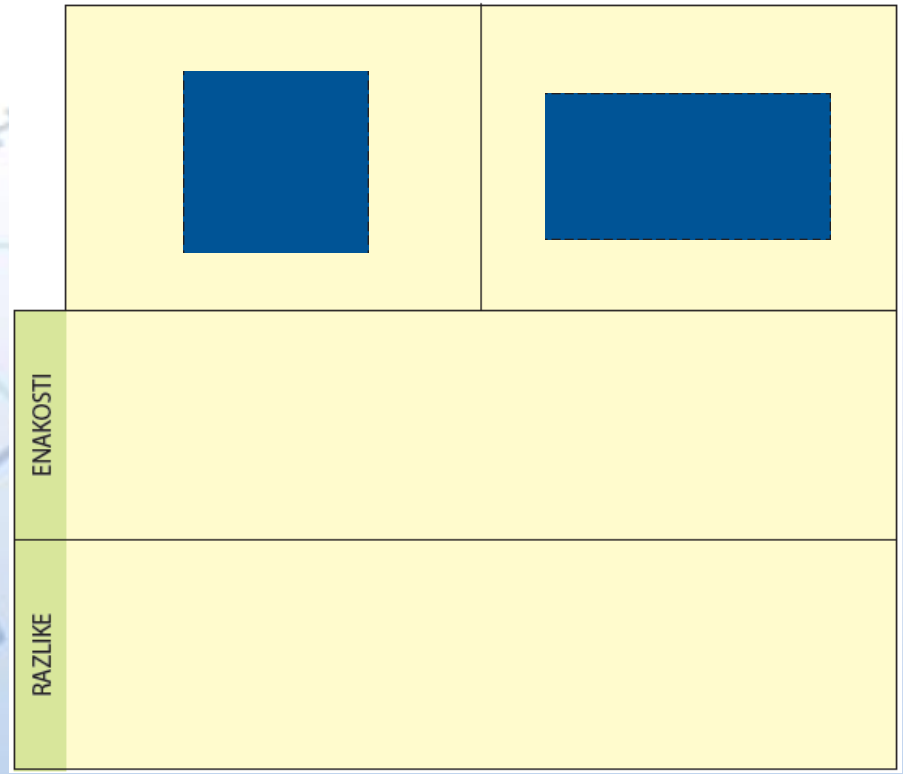
1. Koliko mačk je na sliki?
2. Primerjajmo štirikotnike
3. Tvorimo definicije štirikotnikov
4. Razvrščajmo štirikotnike



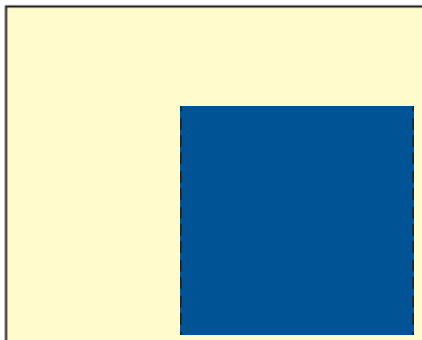

Vir slike: https://www.flaticon.com/free-icon/animal-paw-print_64431

Primerjajmo kvadrat in pravokotnik

Primerjajte lika. Zapišite enake lastnosti in lastnosti, po katerih se kvadrat in pravokotnik razlikujeta.



Primerjajmo kvadrat in pravokotnik



ENAKOSTI	Nasprotni stranici sta *vzporedni*. Sosednji stranici sta *pravokotni*. **Nasprotni** stranici sta enako dolgi. 4 stranice, 4 oglišča, 4 notranji koti
RAZLIKE	Kvadrat ima **vse** stranice enako dolge.

Ugotovitev

Vse lastnosti, ki karakterizirajo pravokotnik, veljajo tudi za kvadrat.

Vsak kvadrat je pravokotnik.

Razdelitev v skupine

Skupina	Primerjajte lika:
Januar-februar	pravokotnik, paralelogram
Marec-april	kvadrat, romb
Maj-junij	deltoid, romb
Julij-avgust	paralelogram, romb
September-oktober	paralelogram, trapez
November-december	trapez, pravokotnik

Vsak romb je paralelogram.

Vsak paralelogram je trapez.

Vsak pravokotnik je paralelogram.

Vsak romb je deltoid.

Vsak romb je trapez.

Vsak kvadrat je pravokotnik.

Vsak kvadrat je trapez.

Vsak kvadrat je deltoid.

Vsak kvadrat je paralelogram.

Vsak kvadrat je romb.

Vsak pravokotnik je trapez.

ENAKOSTI		
RAZLIKE		

Po korakih …

1. Koliko mačk je na sliki?
2. Primerjajmo štirikotnike
3. Tvorimo definicije štirikotnikov
4. Razvrščajmo štirikotnike



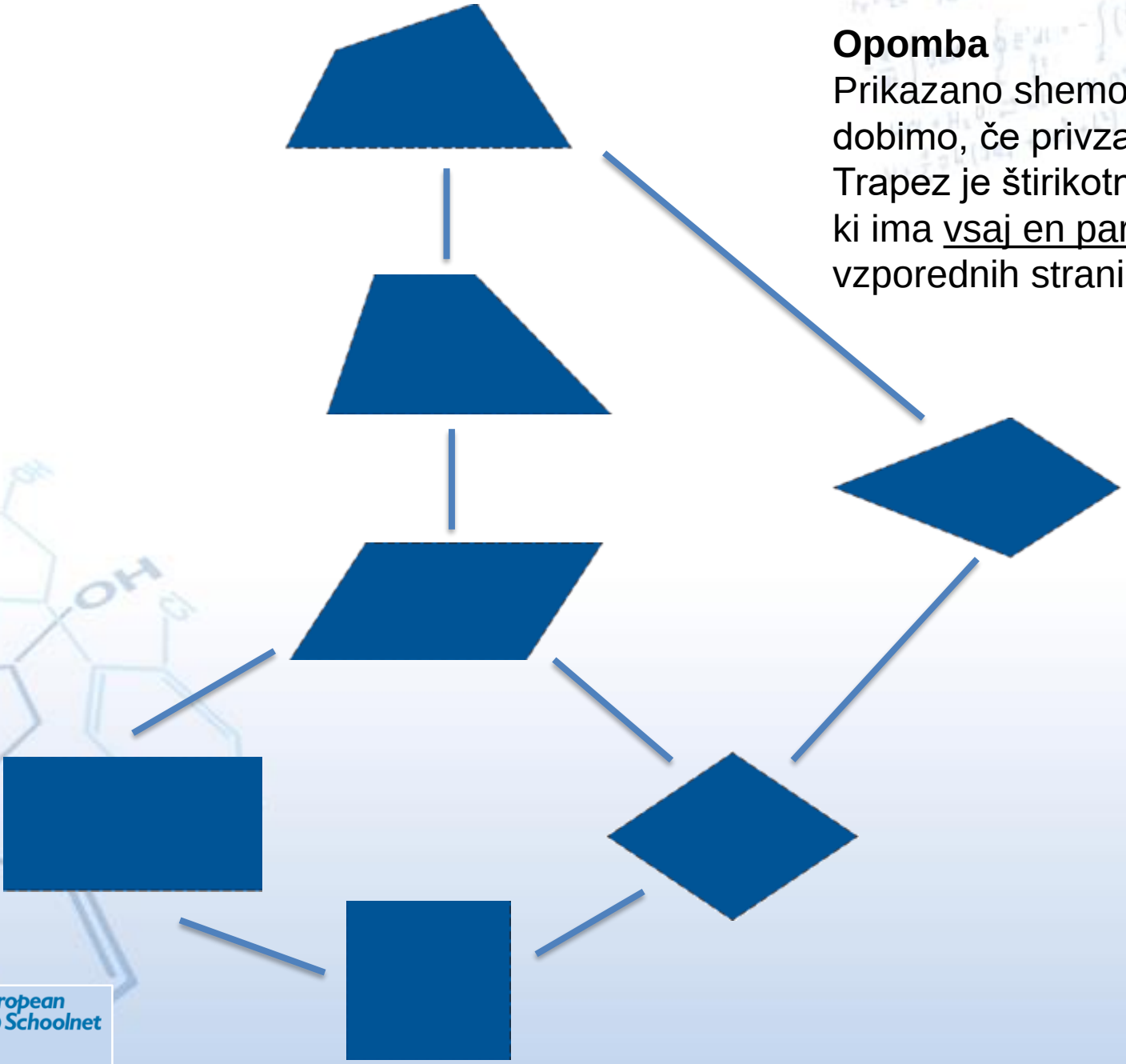

Vir slik: https://www.flaticon.com/free-icon/animal-paw-print_64431

Generična definicija

Pojem definiramo s pomočjo najbližjega „rojstnega pojma“ in lastnosti, ki so nujne in med seboj neodvisne (Prvanović, 1970).

Vir slike: https://en.wikipedia.org/wiki/Felidae

Opomba
Prikazano shemo dobimo, če privzamemo:
Trapez je štirikotnik,
ki ima vsaj en par
vzporednih stranic.



Definicije štirikotnikov

Dopolni poved.

Kvadrat je pravokotnik, ki _____.

Za sošolca sestavi dve podobni nalogi. Sošolec naj sestavi dve podobni nalogi zate. Po reševanju drug drugemu preverita pravilnost in podajta povratno informacijo.

Nalogi, ki ju je zate sestavil tvoj sošolec:

Povratna informacija:

Razdelitev v skupine

Skupina	Zapišite generično definicijo lika:
Januar-februar	kvadrat
Marec-april	pravokotnik
Maj-junij	romb
Julij-avgust	paralelogram
September-oktober	trapez
November-december	deltoid

Generične definicije štirikotnikov

Lik	Primeri generičnih definicij
Kvadrat	Kvadrat je pravokotnik, ki ima vse stranice skladne. Kvadrat je romb, ki ima vse notranje kote prave.
Pravokotnik	Pravokotnik je paralelogram, ki ima vse notranje kote prave. Pravokotnik je paralelogram, ki ima skladni diagonali.
Romb	Romb je paralelogram, ki ima vse stranice skladne. Romb je deltoid, ki ima vse stranice skladne.
Paralelogram	Paralelogram je trapez, ki ima skladni osnovnici. Paralelogram je trapez, ki ima vzporedna kraka.
Trapez	Trapez je štirikotnik, ki ima vsaj en par vzporednih stranic.
Deltoid	Deltoid je štirikotnik, ki ima dva para skladnih sosednjih stranic.

Po korakih …

1. Koliko mačk je na sliki?
2. Primerjajmo štirikotnike
3. Tvorimo definicije štirikotnikov
4. Razvrščajmo štirikotnike

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SCIENTIX

Razvrščajmo štirikotnike

Danih je šest nalog. Pri vsaki nalogi izberi ustrezne modele likov.

1. Med danimi modeli štirikotnikov izberi vse modele **kvadrata**.
2. Med danimi modeli štirikotnikov izberi vse modele **pravokotnika**.
3. Med danimi modeli štirikotnikov izberi vse modele **romba**.
4. Med danimi modeli štirikotnikov izberi vse modele **paralelograma**.
5. Med danimi modeli štirikotnikov izberi vse modele **trapeza**.
6. Med danimi modeli štirikotnikov izberi vse modele **deltoida**.

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Kaj bi svetoval sošolcu, da bo lažje izbral vse pravokotnike?

Kaj bi svetoval sošolcu, da bo lažje izbral vse paralelograme?

Še nekaj možnosti uporabe dejavnosti z izobraževalnega lističa

Na podlagi definicij različnih štirikotnikov učenci iščejo njihove slikovne reprezentacije.

Za preverjanje razumevanja definicij.

Carollov diagram (npr. po kriteriju: je pravokotnik, ni pravokotnik).

Vennov diagram (npr. kvadrati, pravokotniki).

Uporaba idej z lističa Primerjajmo in razvrstimo štirikotnike (Scientix) v primerih geometrijskih teles.

Druga serija IL Scientix NA-MA prinaša naslednje naslove:

2. serija IL

Dosegljivi na

http://url.sio.si/nN7

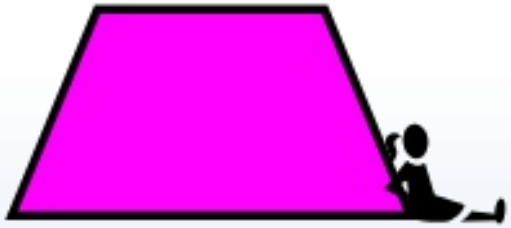
NA-MA eksperimenti:

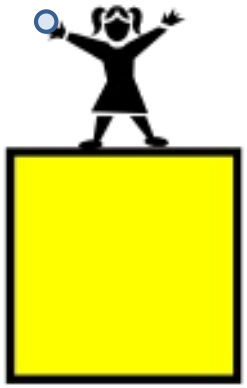
- IL Razlikujmo čiste snovi in zmesi (mag. Andreja Bačnik)
- IL Raziskujmo vpliv taljenja ledu na velikost sile vzgona (Jaka Banko)
- IL Preučimo premo enakomerno gibanje (Milenko Stiplovšek)
- IL Z mobilnim telefonom raziskujmo zvok (Goran Bezjak)

NA-MA dejavnosti:

- IL Kamnine in minerali – Katere lastnosti skrivajo? (Bernarda Moravec)
- IL Izdelajmo modelni prikaz zgradbe in podvojevanja DNA (Simona Slavič Kumer in Saša Kregar)
- IL Preučimo označevanje živil (Irena Simčič)
- IL Primerjajmo dve športni dejavnosti glede na hitrost in agilnost (Nives Markun Puhan)
- IL Raziskujmo zvok steklenic (dr. Leonida Novak in dr. Sandra Mršnik)
- IL Raziskujmo zvok trobente (dr. Leonida Novak in dr. Sandra Mršnik)
- IL Pretvarjajmo merske enote (Vesna Vršič)
- IL Primerjajmo in razvrstimo štirikotnike (mag. Melita Gorše Pihler)
- IL Preiskujmo v Pascalovem trikotniku (mag. Sonja Rajh)
- IL Preiskujmo v Leibnizevem trikotniku (mag. Sonja Rajh)
- Priloga za IL Preiskovanje v Pascalovem in Leibnizevem trikotniku (mag. Sonja Rajh)
- IL Premikanje mravlje z algoritmom (mag. Radovan Krajnc in dr. Matej Črepinšek)

Hvala za sodelovanje!





Vir slike: http://moziru.com/explore/Polygon%20clipart%20quadrilateral/

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