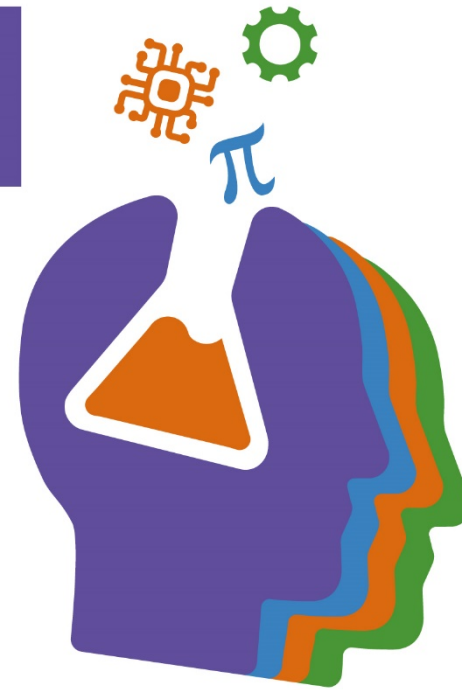


**ThIN**  
**KER**  
**LAB**





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# Priročnik za učitelje

Smernice za podporo pri uporabi vsebin in orodij za izvajanje učnih projektov na platformi THINKER LAB.



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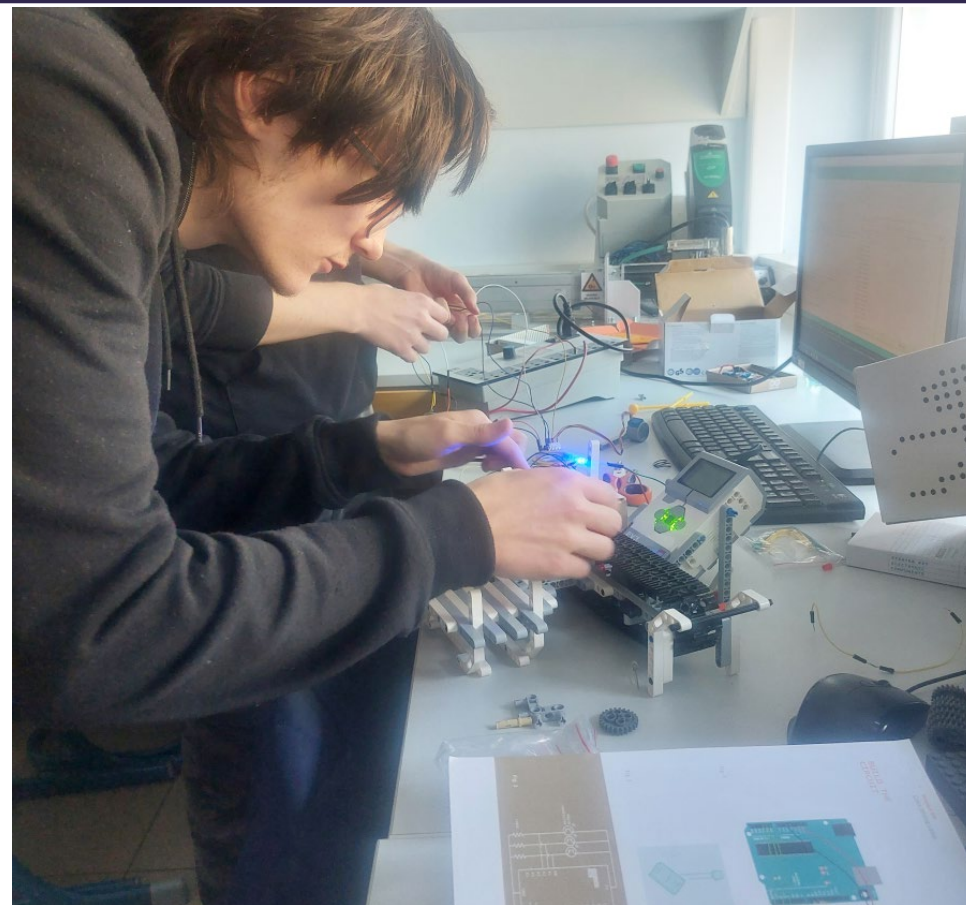


# Uvod

Namen projekta **THINKER LAB** je razširiti izobraževalno ponudbo, ki je na voljo učencem, in jim ponuditi učne poti, ki so bolj povezane z **učnimi procesi soustvarjanja**, ki temeljijo na **laboratorijskem pristopu**.

Platforma Thinker Lab je nastala v okviru evropsko financiranega projekta, namenjenega izboljšanju znanja STEM pri učencih in **vkjučujočemu učenju**.

Ta **priročnik** je namenjen **učiteljem**, ki se zanimajo za **uporabo metodologije** na svoji šoli.



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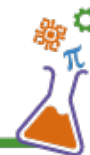
# Uvod

povečati  
socialno  
vključenost  
mladih  
študentov.

izboljšanje znanja  
STEM pri učencih z  
metodologijami  
aktivnega  
vključevanja.

Thinker  
Lab  
cilji

uporabljati  
delovne tehnike,  
ki temeljijo na  
Tinkeringu in  
ustvarjanju poceni  
fablabov z  
uporabo  
recikliranih  
materialov.

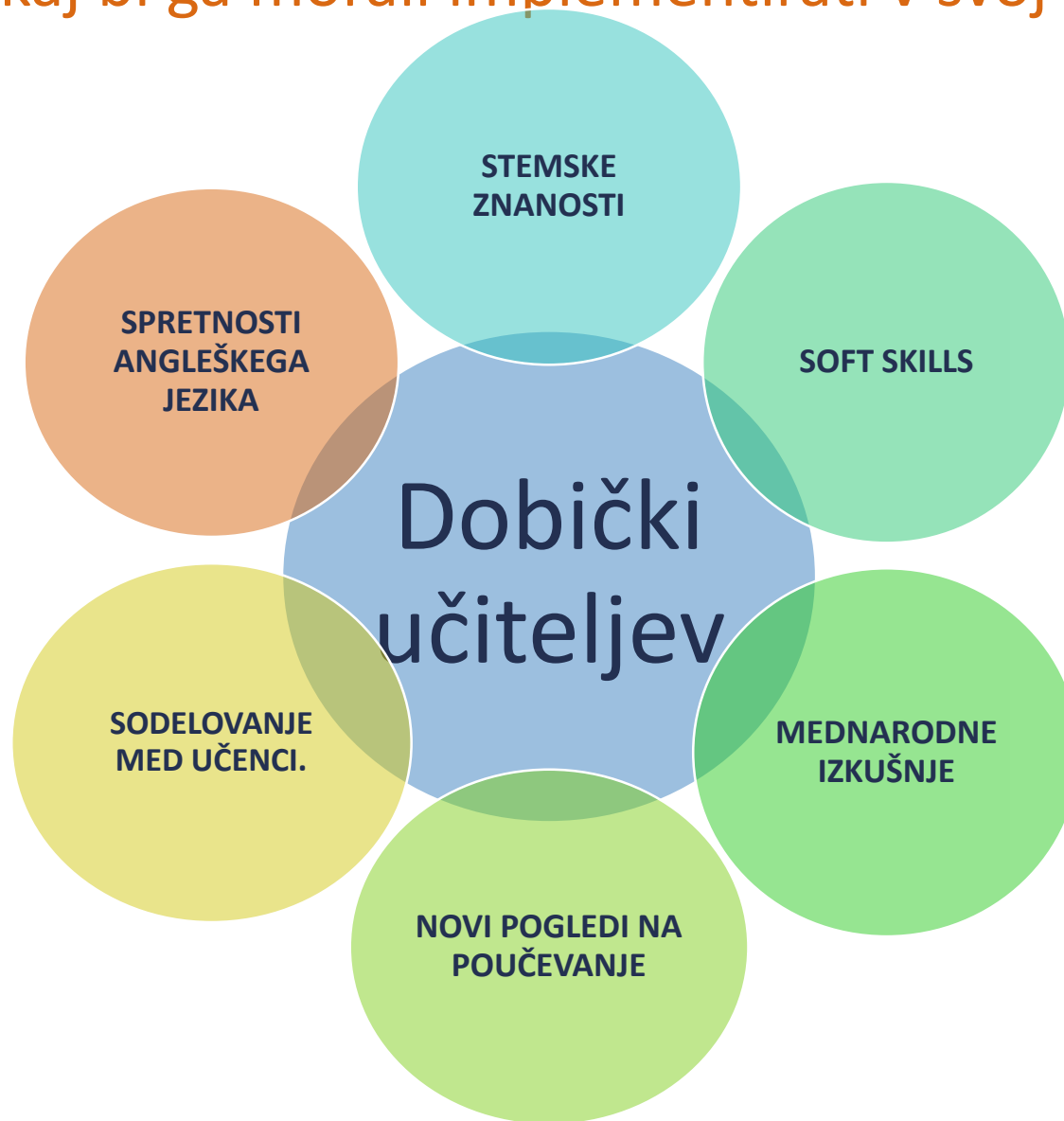




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# 1. Zakaj bi ga morali implementirati v svoj razred?



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# Znanja in spretnosti učiteljev

Učitelji lahko učencem med izvajanjem dejavnosti pomagajo **izboljšati** različne **spretnosti STEM**; **hkrati** lahko učitelji izboljšajo različne spretnosti, kot so:

- vključujoče poučevanje in spodbujanje aktivnega sodelovanja učencev;
- Uporaba brezplačnih spletnih orodij;
- Izboljšanje digitalnih spretnosti;
- Vzpostavitev in vodenje spletne platforme za skupne projekte;
- Sodelovanje učencev pri sodelovalnem učenju.

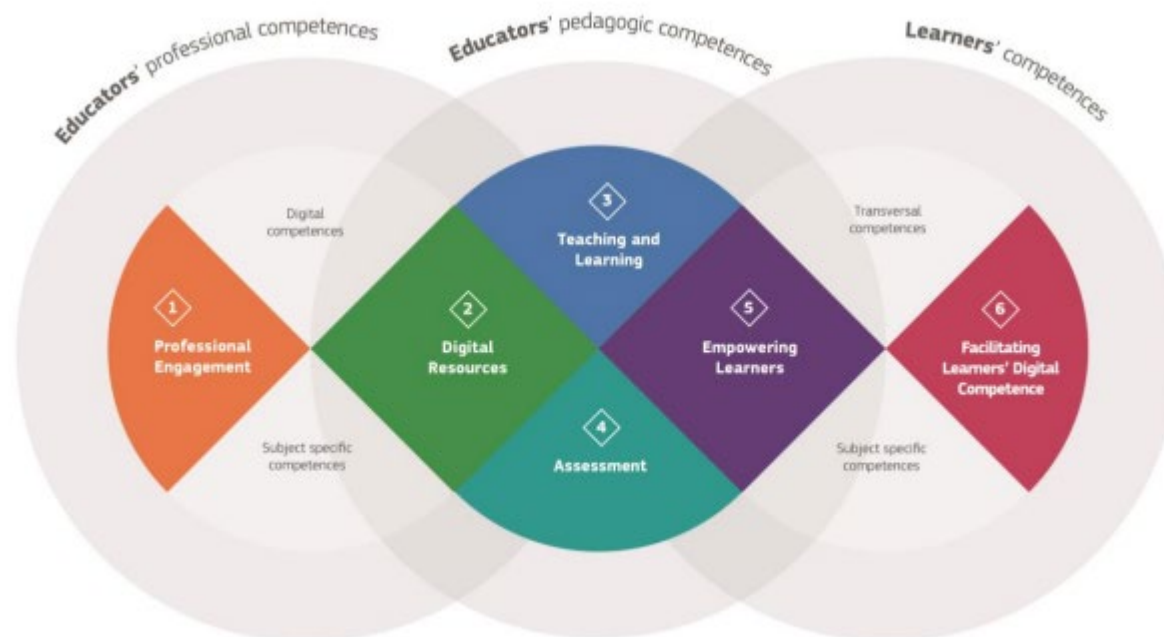


Figure 2: Conceptual approach

[Tämä kuva](#), tekijä Tuntematon tekijä, käyttöoikeus: [CC BY-SA](#)

# Mehke veščine učiteljev

Učiteljeve **mehke veščine** se izboljšujejo zaradi **interakcije z novimi kolegi, v medkulturnem okolju**, kjer je potrebna komunikacija z drugimi kulturami, pa tudi prilagodljivost in prožnost pri poučevanju - bodite pripravljeni prilagoditi svoj jezik in svoj didaktični ritem!





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# Mednarodne izkušnje

Z izvajanjem projekta imajo učitelji dostop do **mednarodne priložnosti** in sodelujejo s svojimi kolegi v tujini ter preizkušajo didaktične dejavnosti v **medkulturnem in angleško govorečem okolju**.



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# Znanje angleščine učiteljev NAZAJ

Raven 2.1

Udeležba na mednarodni izkušnji učiteljem omogoča, da **vadijo in izboljšajo** svoje znanje angleškega jezika.

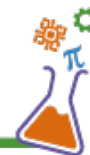


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# Novi pogledi na poučevanje

Z izvajanjem pristopa Thinker Lab učitelji **zdržujejo** svoje **izkušnje** pri poučevanju z **evropskimi kolegi** in uporabljajo **pristop TINKERING in LABORATORIJ**.

Učitelji se učijo drug od drugega in skupaj **razvijajo nove prakse** in **nove poglede** na svoje **poučevanje**.



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# Prenosljivost in vrednotenje

Da bi učitelji zagotovili, da je njihovo delo učinkovito za razvoj učencev, je treba uvesti **jasna merila za ocenjevanje**, da bi zagotovili uspeh učencev in učiteljev. Ta merila za ocenjevanje morajo biti **specifična, merljiva** ter **usklajena z izobraževalnimi standardi in cilji**.



S pomočjo **evalvacije** lahko učitelji ugotovijo, kako uspešne so za učence strategije poučevanja in učenja, ter ustrezno spremenijo svoje metode poučevanja.





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# jasna merila za ocenjevanje



## Alignment with Learning Objectives

Učitelji morajo jasno **opredeliti učne cilje** in z njimi uskladiti merila za ocenjevanje. S tem bodo zagotovili, da bodo ocene merile tisto, kar naj bi se učenci naučili.



## Transparency

Na začetku vsakega učnega modula ali programa je treba učencem **jasno sporočiti merila za ocenjevanje**. Preglednost spodbuja zaupanje in pomaga učencem razumeti, kako bo njihova uspešnost ocenjena.



## Consistency

Zagotovite skladnost meril za ocenjevanje pri različnih ocenjevanjih in med različnimi učitelji ali inštruktorji.



## Fairness

Merila morajo biti pravična in nepristranska ter morajo vse učence obravnavati **enako**. Izogibajte se kakršni koli obliki diskriminacije ali favoriziranja.



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# Rubrika

**Rubrika** je uporabno orodje za ocenjevanje, ki učiteljem pomaga oblikovati jasna merila za ocenjevanje, v katerih so navedena vsa posebna merila, ki jih mora izkazovati delo učencev, in opisana raven kakovosti za vsako merilo.



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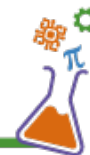


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# Primer rubrike

TEACHER RUBRIC FOR SELF-ASSESSMENT OF CHALLENGE DESIGN				
	EXCELLENT LEVEL	ADEQUATE LEVEL	BASIC LEVEL	LOW LEVEL
	4	3	2	1
<b>1.1: The learner is at the center of the challenge</b>	Situations are provided for students to conduct research and express their knowledge and doubts: being responsible for the whole investigation, drawing conclusions that allow generalization, reflecting and taking into account students' concerns.	Contexts are provided for students to express their knowledge and doubts: being responsible for part of the research, reflecting and taking into account students' concerns.	Students are given a topic to explore in depth. Reflection and learning is taken into account.	Students are helped to progress gradually in the contents chosen by the teachers.
<b>1.2: It is associated with a problem or a day-to-day situation.</b>	As a starting point, students take a situation or problem from their daily life and go deeper into it. At the end of the process, some conclusions are drawn to apply to that situation.	Students apply what they have learned in their daily lives and draw some conclusions.	Students carry out activities related to their day-to-day situations.	The activities carried out have no connection with their day-to-day life.
<b>1.3: Cooperative work is encouraged</b>	In order for students to work cooperatively, the following aspects are developed: positive interdependence, individual responsibility, group cohesion and effective communication.	Students work in teams and collectively make decisions that affect the final production of the project.	Students work in teams.	Each student does his or her own work.
<b>1.4: Active methodologies used</b>	Active learning methodologies are followed: students search for information, analyze it critically, ask questions about the content and draw conclusions.	Some active learning strategies are followed: students receive information, analyze it, ask questions and draw conclusions.	The students carry out some active activities to acquire knowledge.	Students receive information.





<p><b>1.5: Objectives are appropriate</b></p>	<p>The objectives are excellent for developing the basic competences of the stage, both disciplinary and metadisciplinary, and are completely related to the contents to be studied.</p>	<p>The objectives are adequate to develop the basic competencies of the stage and are related to a certain extent to the contents to be studied.</p>	<p>The objectives are somehow related to the basic competences and the content of the stage.</p>	<p>Objectives and content are too sparse</p>
<p><b>1.6: Creativity is encouraged</b></p>	<p>The activities require students to create and communicate a production based on the knowledge and skills they are acquiring.</p>	<p>The activities require students to analyze situations in depth in accordance with the knowledge acquired.</p>	<p>The activities require students to understand the contents and apply them in new situations.</p>	<p>The activities require students to recall and/or reproduce information.</p>
<p><b>1.7: A variety of evaluation tools are used</b></p>	<p>In addition to all of the above, a series of tools are used for students to self-assess and/or co-assess their own learning and performance</p>	<p>The final activities and/or productions of the challenge are evaluated by the teacher following evaluation criteria (with rubrics or evaluation scales) and providing oral or written feedback.</p>	<p>The final activities and/or productions of the challenge are evaluated following the evaluation criteria, but without evaluation tools.</p>	<p>The challenge is not evaluated or graded</p>
<p><b>1.8: Adapts to the school environment and student body</b></p>	<p>The design of the challenge has taken into account the school environment and the diversity of the students involved.</p>	<p>The design of the challenge has taken into account the school environment and the majority of the student body.</p>	<p>The designed challenge can be suitable for any school</p>	<p>The challenge designed is not suitable for the environment and students of the school where it will be implemented.</p>





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# Povratne informacije

**Ankete med študenti** so še en odličen način za zbiranje povratnih informacij o vašem poučevanju. Ankete razdelite večkrat med letom in poskusite vključiti **kombinacijo ocenjevalnih elementov, ki temeljijo na lestvici ali številu**, ter vprašanj z odprtimi odgovori, da bodo imeli učenci možnost podati podrobnejše povratne informacije.



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# Samokontrola

Če natančno beležite svoje ocene, lahko zlahka **primerjate svoje strategije** med urami in med leti. Prav tako lahko zlahka **pregledate**, kako sta se vaša pedagoška praksa in kariera razvijali - in to je lahko zelo koristno. Učitelji bi lahko za **samoocenjevanje** uporabili nabor vprašanj.



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# Vprašanja za samoocenjevanje

## 1. Učni pristop in metode:

- Ali učence učinkovito vključujem v učni proces?
- Ali so moje učne metode in materiali ustrezni in posodobljeni?
- Ali svoj način poučevanja prilagajam različnim potrebam in učnim stilom učencev?

## 2. Vodenje razreda:

- Kako dobro ohranjam pozitivno in vključujoče okolje v razredu?
- Ali učinkovito obravnavam moteče vedenje in vzdržujem disciplino?
- Ali spodbujam varen in spoštljiv učni prostor za vse učence?

## 3. Načrtovanje pouka:

- Ali so moji učni načrti jasni, urejeni in usklajeni s cilji učnega načrta?
- Ali za vsako učno uro navedem jasne učne cilje in rezultate?
- Ali uporabljam različne vire in učne pripomočke za izboljšanje pouka?

## 4. Ocenjevanje in povratne informacije

- Ali učencem zagotavljam pravočasne in konstruktivne povratne informacije o njihovem delu?
- Ali je moje ocenjevanje usklajeno z učnimi cilji in pošteno za vse učence?
- Kako lahko podatke o ocenjevanju uporabim za prilagoditev svojih učnih metod?

## 5. Komunikacija in sodelovanje:

- Kako dobro komuniciram z učenci, starši in sodelavci?
- Ali sodelujem z drugimi učitelji in osebjem, da bi izboljšal šolsko okolje?
- Sem odprt za povratne informacije in predloge drugih?

## 6. Osredotočenost na študente:

- Ali svoje poučevanje prilagajam različnim potrebam in sposobnostim učencev?
- Ali spodbujam kritično razmišljanje, reševanje problemov in samostojno učenje?
- Kako dobro podpiram socialni in čustveni razvoj učencev?

## 7. Upravljanje s časom in ravnovesje med delom in zasebnim življenjem:

- Ali učinkovito upravljam svoj čas, da uskladim poučevanje, ocenjevanje in zasebno življenje?
- Ali zdravo usklajujem poklicno in zasebno življenje ter se izogibam izgorelosti in stresu?

## 8. Vključevanje in enakost:

- Kako vključujoč in pravičen je moj pristop k poučevanju glede na različna ozadja učencev?
- Ali v razredu obravnavam vprašanja pristranskosti in diskriminacije?
- S katerimi ukrepi zagotavljam vsem učencem enake možnosti za uspeh?

## 9. Splošno zadovoljstvo:

- Kako sem zadovoljen s svojim pedagoškim delom in vplivom na učence?
- Na katere dosežke sem ponosen in katera področja želim izboljšati?





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# Kaj potrebujete za izvajanje modula?



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## Podpora šolskega sveta in vodje izobraževanja

Podpora šolskega sveta in vodje izobraževanja je bistvenega pomena, saj imenujeta projektno skupino, ki se ukvarja z dejavnostjo. Brez njune podpore se bo projekt verjetno soočil s težavami in ne bo dosegel pričakovanih rezultatov.



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## Projektna skupina: vodja projekta, učitelji

Za dobro izvajanje dejavnosti je pomembno, da se vključijo in sodelujejo učitelji vseh **predmetov STEM**. Hkrati je temeljnega pomena, da imamo **vodjo projekta** ali člana projektne skupine, ki je zadolžen za usklajevanje dejavnosti. Številke sodelujejo na šolski in mednarodni ravni.

### Vodja projekta

- usklajuje projektno skupino na šolski in mednarodni ravni. Spremlja, ali so vse dejavnosti pravočasno izvedene.

### Učitelji

- razvijanje projektov pri svojih predmetih.





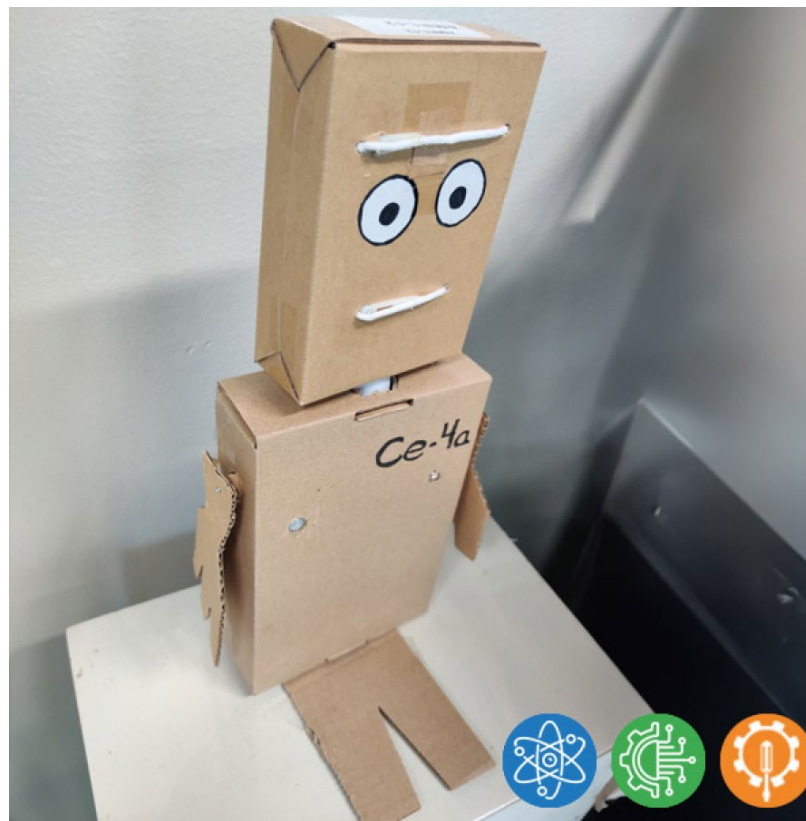
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# Zavzetost učencev

Učence poskušajte pritegniti **že od samega začetka**. Vključite jih v evropsko dejavnost, spodbudite njihovo **radovednost** in **zanimanje** za aktivno in skupinsko učenje.

Združite jih na **nacionalnih in mednarodnih tekmovanjih v spretnostih**, kjer se bodo vsaj virtualno spoznali.



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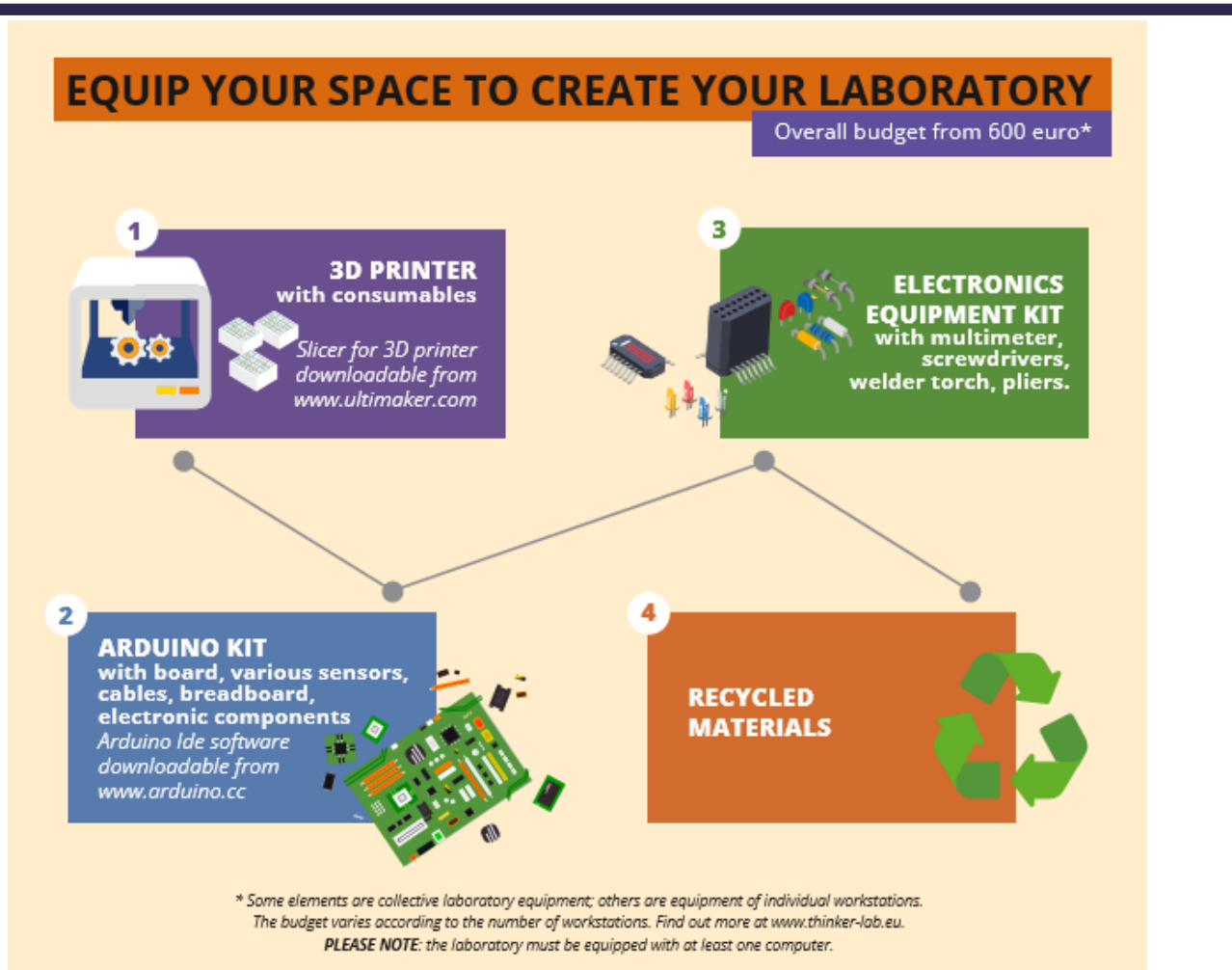
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# Oprema

Za izvajanje dejavnosti so potrebni nekaj digitalne opreme in orodij.

Tukaj je kratek seznam, ki vam bo omogočil, da začnete razmišljati o tem.





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# Hackathon - kako organizirati dogodek

Organizacija hackathona je način spodbujanja **inovacij** z reševanjem določene naloge. Hackaton je mogoče organizirati na različne načine, vendar je cilj izvesti **časovno omejen tekmovalni ali sodelovalni dogodek** s ciljem **rešiti vnaprej določeno težavo** (ali ustvariti inovacijo).

Hekatoni spodbujajo sodelovanje, so vključujoči in imajo krajše inovacijske cikle. Lahko potekajo prek spleta ali na kraju samem.



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# Nasveti za organizacijo Hackatona

- Odločite se o **cilju** hackatona - ali je cilj **ustvariti** določeno tehnologijo STEM ali **rešiti težavo**. Jasnejši kot je cilj, boljši so rezultati;
- **Datum** določite vnaprej in povabite udeležence;
- Vnaprej določite jasna in sporočena **pravila**;
- Izberite **nagrado**. Ena velika ali več manjših. Kontaktirajte sponzorje;
- organiziranje **usposabljanj** za povečanje privlačnosti STEM in izboljšanje učnih rezultatov tako za učitelje kot za učence, ki sodelujejo v hackatonu.



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