Escolas Digitais
e os desafios do século 21

DSoE
Digital Schools of Europe

Escolas Digitais
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Rosa Doran

NUCLIO – Núcleo Interativo de Astronomia

CITEUC – Centro de Investigação da Terra e do Espaço da Universidade de Coimbra

NUCLIO
Núcleo Interactivo de Astronomia

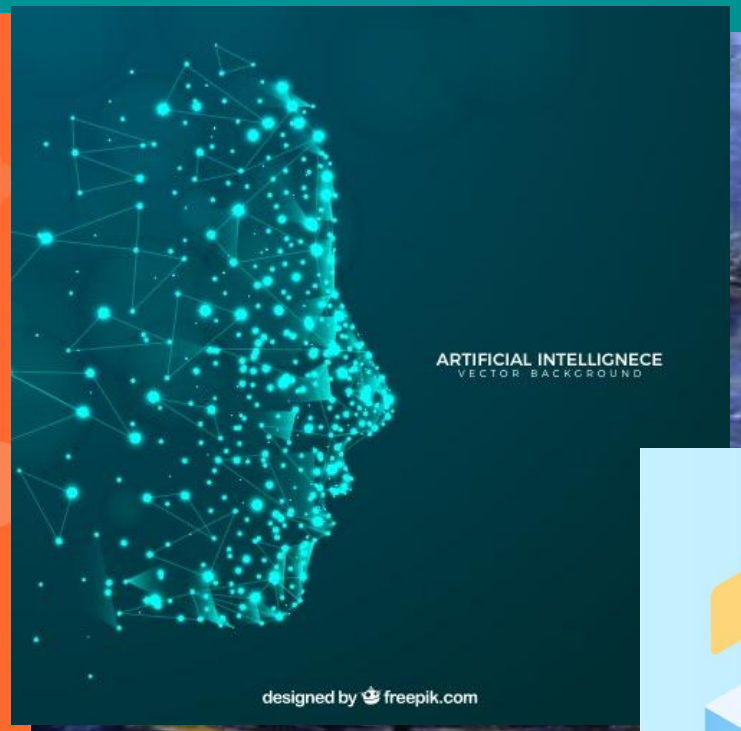
Quem serão os futuros líderes do nosso planeta e como melhor prepará-los ?

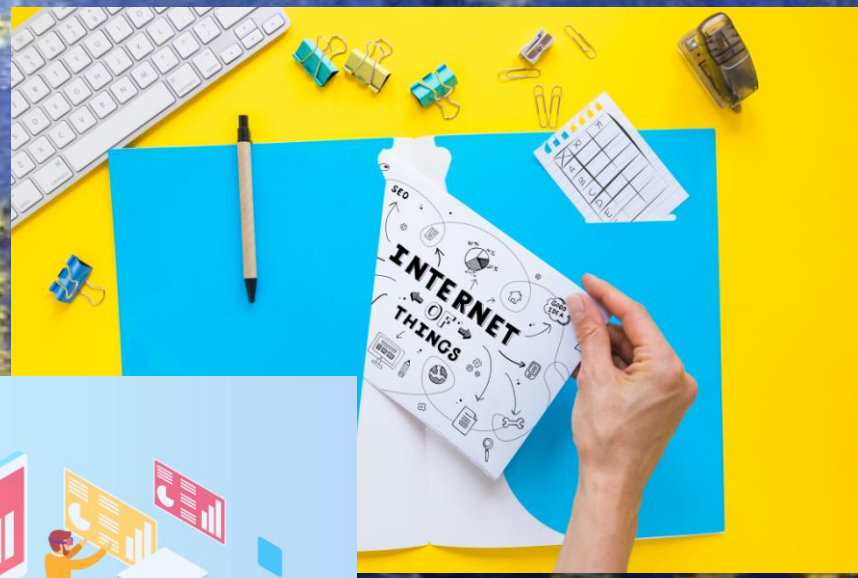
Como deverá ser a sua educação?

The web of knowlege

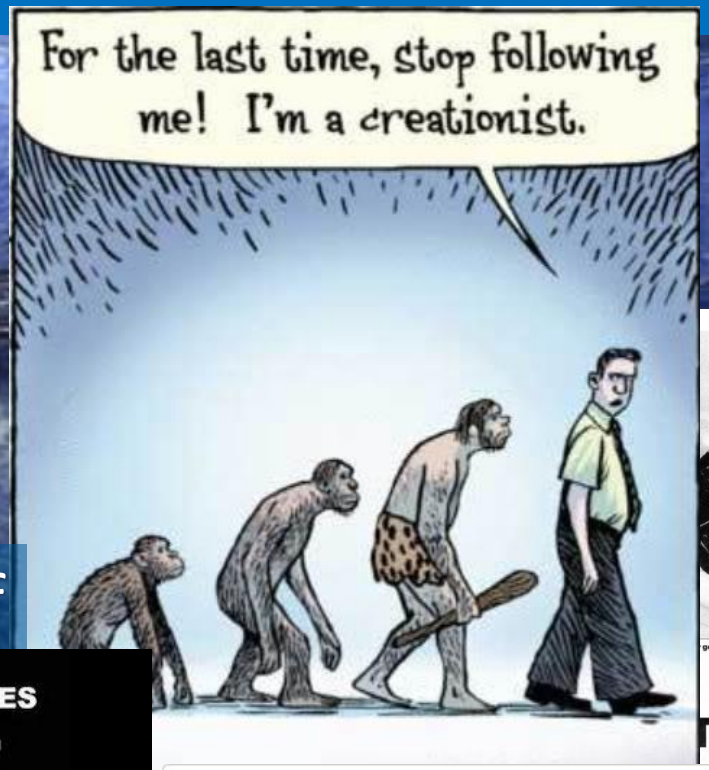
Diversidade / Tolerância / Solidariedade / Equidade / Igualdade

Quais serão as profissões em 2030





Urgente: EDUCAÇÃO, Consciência Global e LITERACIA !!!!



Flat Earth Proof

good at earthquakes," says Joan Quigley, who predicted a May 5 tremor. "What I do best is politics."

Cover

THE PRESIDENT'S ASTROLOGERS

s have been sneaking peeks at the stars for a long, long time

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trouble with him," says Quigley, who volunteered her services to the campaign and later provided them, on a regular basis, to the Reagan White House.

Throughout this association, the Vassar-educated astrologer with country club manners was—as befits a lady—terribly discreet. By the end of the first term, her fellow astrologers had begun to notice the impeccable celestial timing of many Reagan moves, like the bombing of Libya and his announcement for a second term. "I had astrologer friends calling me saying, 'Reagan must have had his chart done,' " Quigley recently confided during an interview in a suite at San Francisco's Fairmont Hotel. "I just said, 'Yes. He must have been consulting someone.' "

Last week the soignée soothsayer's cover was blown by former White House aide Donald Regan. In his just-published book, *For the Record*, Regan spilled what he insisted was "the most closely guarded domestic secret of the Reagan White House." To wit: "Virtually every major move and decision the Reagans made during my time as White House Chief of Staff was cleared in advance with a woman in San Francisco who drew up horoscopes to make certain that the planets were in a favorable alignment for the enterprise." Within hours, an avid press had zeroed in on Quigley as the mystery adviser.

If astrology was the Reagans' little secret, however, it was not very well kept. "I have known since before Reagan was elected that they went to astrologers," says former *Washington Post* style reporter Sally Quinn, "and that's why I'm surprised at all of the surprise and shock." In fact the Reagans' interest in astrology goes back to the early '50s—and amounts to far

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Século 21 – Manual de Utilização

LITERACIA DIGITAL: saber utilizar de forma efetiva para atingir os objetivos, segurança, literacia científica, pensamento computacional, etc.

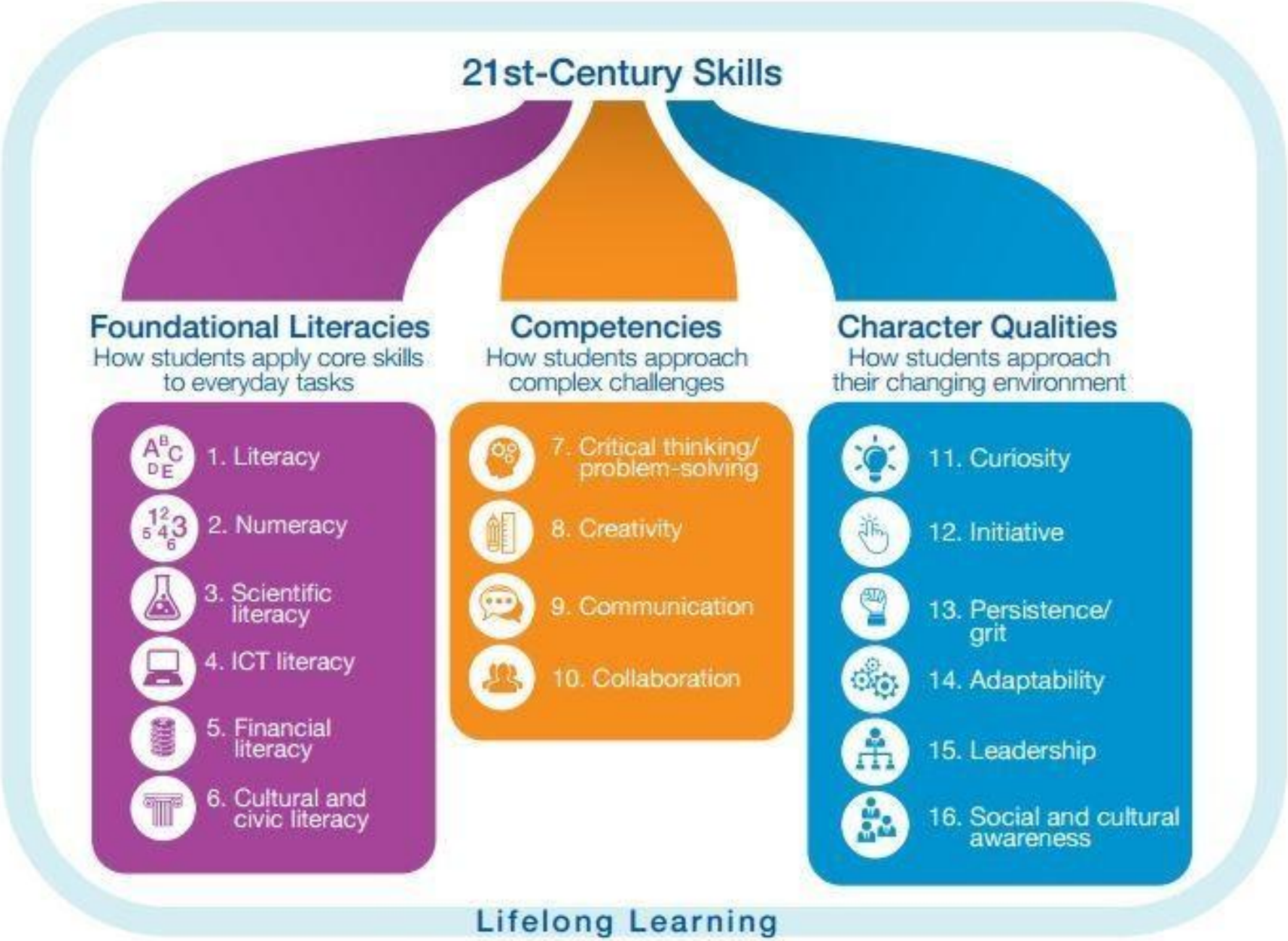
COMPETÊNCIAS PARA O SÉCULO 21 – para professores e estudantes: comunicação, colaboração, pensamento criterioso, criatividade, aprendizagem, aprender a aprender, etc.

COMPETÊNCIAS HUMANITÁRIAS: tolerância, paciência, educação, persistência, atitude positiva, resiliência, etc.

METODOLOGIA PARA SÉCULO 21: pensamento visual, design thinking, auto-aprendizagem personalizada, etc.

Os desafios para as novas gerações

Exhibit 1: Students require 16 skills for the 21st century



Os Desafios para Todos Nós

Tecnologia da Informação Comunicação (TIC) no Currículo

	Inicial	Habilitado	Confiante	Desenvolvido
Nível de Conhecimento do Professor	Os professores tem uma compreensão geral acerca da forma como a ART pode melhorar o ensino e aprendizagem	50% dos professores compreendem metodologias para integrar as TIC no currículo.	A maioria dos professores compreender como ART pode ser usado no currículo para melhorar a aprendizagem dos alunos.	A maioria dos professores escolhem as suas próprias metodologias para integração das TIC no currículo.
Planeamento	Há pouco ou nenhum planeamento para a integração das TIC no curriulo, com atividades de TIC voltadas apenas para aquisição de competências básicas pelos alunos. P.ex: word processing	Existe algum planeamento para a integração das TIC, com o foco principalmente na preparação de professores, o ensino de toda a turma, avaliações, em grupos ou trabalho individual, envolvendo a utilização de várias ferramentas digitais	Os professores planificam, de forma estruturada a integração das TIC nas suas aulas, atividades dos alunos e auto-avaliação. Os estudantes utilizam regularmente várias ferramentas digitais.	A escola dedica tempo para explorar novas abordagens para usar ART para melhorar a aprendizagem dos alunos. Os professores utilizar as ART de forma apropriada. Ferramentas como *Learning Analytics*, ePortfolios e outras ferramentas digitais similares são utilizadas.
Utilização pelo Professor	Os professores usam computadores isoladamente e apenas for da sala de aula.	Os professores usam as TIC para planear as aulas, avaliação e como ferramenta de ensino.	Os professores usam as TIC para fornecer oportunidades de aprendizagem transversais, centradas no aluno e baseadas no método construtivista e criam opportunidades para auto-avaliação.	Há evidências consistentes de atividades colaborativas, baseadas na descoberta e da utlização da ART em toda a escola. Os professores utilizam Learning Analytics, ePortfolios e outras atividades similares regularmente.
Experiência do Estudante	O estudante, ocasionalmente, utilizar as TIC como parte do processo de aprendizagem.	Estudantes experimentam as actividades ART regularmente.	Estudantes experimentam as actividades ART regularmente e utilizar as TIC para auto-avaliação e para colaborar nas actividades curriculares, tanto dentro da escola e com outras escolas.	Os alunos são orientados na utilização das TIC para se dedicarem a oportunidades autênticas baseadas em descobertas e para apoiar e avaliar a aprendizagem, p. criando conteúdo digital e eportfolios.
Necessidades Educativas Especiais	Os professores estão conscientes de que as TIC podem melhorar as oportunidades de aprendizagem dos alunos com NEE.	Os professores utilizam as TIC, focando-se no desenvolvimento da literacia e numeracia para os alunos com necessidades educativas especiais.	Os professores utilizam ferramentas de diagnóstico TIC, atividades NEE e recursos de TIC para abordar objetivos curriculares aos alunos com necessidades educativas especiais.	TIC é essencial para todos os aspectos do ensino e aprendizagem das NEE, bem como no desenvolvimento dos PEI. Os recursos das TIC e actividades NEE são incorporadas em todos os níveis do planeamento escolar.

Escolas Digitais

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Digital Schools of Europe

e-Learning ROADMAP

National Centre for Technology in Education
Ionad Náisiúnta don Teicneolaíocht sas Oideachas

		Initial	e-Enabled	e-Confident	e-Mature
Leadership & Planning	Vision	Vision focuses mainly on ICT equipment.	e-Learning vision is developed by e-Learning Team.	e-Learning vision is fully integrated into the whole school vision.	e-Learning vision is wide ranging and shared by all stakeholders. It is actively tested through the student learning experience.
	Plan	Basic ICT Plan is in place.	e Learning Plan has been developed by e Learning Team. One teacher or a group of teachers has assumed leadership for ICT planning in the school.	Comprehensive e-Learning Plan is integral to the whole school plan. The development of the plan is led by principal/ICT co-ordinating teacher/e-Learning Team with all staff contributing and whole school acceptance. There is a designated ICT co-ordinating teacher with clearly defined duties and responsibilities.	Teachers implement the e Learning Plan in their daily work. Staff & students are actively engaged in innovative and exemplary practice.
	Integration	Focus is mainly on ICT equipment and the acquisition of basic ICT skills.	Focus is mainly on supporting the integration of ICT usage throughout the school.	Focus is mainly on supporting more comprehensive integration of ICT and the exploration of new and more effective approaches to ICT integration.	Focus is mainly on supporting and facilitating personalised and self-directed learning.
	Acceptable Use Policy	School has developed an Acceptable Use Policy for the Internet.	School has developed an AUP following consultation with staff, students, parents/guardians, board of management/trustees.	School has developed and ratified an AUP for Internet and ICT use following consultations with staff, students, and parents. All stakeholders are familiar with its contents and the plan is fully implemented.	The AUP accommodates innovative use of new technologies, and facilitates the development of an ethical and responsible approach to the use of these technologies.
	Special Educational Needs	Support of ICT as a tool for learning in special educational needs exists but is uncoordinated.	Use of ICT is focused on the areas of learning support and resource teaching.	School supports and encourages the use of a wide range of ICT resources and assistive technologies throughout the school to facilitate the inclusion of students with special educational needs in line with the EPSEN Act.	School includes the use of ICT and assistive technologies in the development of all Individual Educational Plans (IEP) for students with special educational needs and uses ICT in all aspects of special educational
ulum	Teacher Understanding	Teachers have a general understanding of how e-learning can improve teaching and learning.	A		

Co-funded by the Erasmus+ Programme of the European Union

Questionário de autoavaliação

Descubra qual o nível de integração das TIC na vida escolar como um todo

Mais...

Roteiro para Escolas Digitais

Verifique as sugestões e procedimentos para melhorar o perfil da escola

Mais...

Cursos online

Conheça procedimentos e sugestões para tornar a sua escola uma Escola Digital de Distinção

Mais...

Novidades

Lançamento do projeto "Escolas Digitais"

20 Novembro, 2017

O projeto "Escolas Digitais" é uma iniciativa do NUCLIO – Núcleo Interactivo de Astronomia que visa trazer para os países de língua portuguesa o processo de certificação e reconhecimento das escolas que se distinguem pela utilização das novas tecnologias como ferramenta para um ensino inovador.

95+

Questionários

67+

Escolas

Liderança e Planeamento

Liderança e Planeamento	TIC no Currículo	Formação Contínua	Cultura da Escola para a ART	Recursos e Infrastrutura
Visão	**Inicial** A visão da escola está focada principalmente no equipamento de TIC.	**Habilitado** ART é desenvolvida por uma equipa de professores dedicada ao tema.	**Confiante** ART está totalmente integrada em toda a visão estratégica para as TIC da escola. Está prevista a colaboração com outras escolas (a nível local, nacional e internacional).	**Desenvolvido** ART abrangente, compartilhada e testada através da aprendizagem dos estudantes.
Planeamento	**Inicial** Há em vigor um plano básico para utilização das TIC.	**Habilitado** O plano para ART é desenvolvido por uma equipa de professores. Um professor ou um grupo de professores assume a liderança pelo planeamento na escola.	**Confiante** Plano de ART abrangente e que integra o plano de TIC da escola. O desenvolvimento do plano é liderado pelo coordenador das TIC, equipa dedicada a ART com a contribuição de todos os professores e com aceitação de toda a	**Desenvolvido** Os professores implementam o plano de ART no seu trabalho diário. Os professores e alunos estão envolvidos ativamente nas práticas inovadoras e exemplares.

Um novo modelo é necessário: Open Schools for Open Societies (OSOS)

Open Schools for Open Societies

A holistic approach to schools as science hubs

Funded by the H2020 Framework Programme of the European Union

Open Schools for Open Societies

ELLINOGERMANIKI AGOGI

Deusto
Universidad de Deusto
University of Deusto

HELLENIC REPUBLIC MINISTRY OF EDUCATION AND RELIGIOUS AFFAIRS
INSTITUTE OF EDUCATIONAL POLICY

Cité de l'espace TOULOUSE

DCU DUBLIN CITY UNIVERSITY

UNIVERSITÄT BAYREUTH

CIÊNCIA VIVA 20

eha
European School Heads Association

NUCLIO
NÚCLEO INTERACTIVO DE ASTRONOMIA

NEMO

Bloomfield Science Museum Jerusalem

ORT
הרשת הטכנולוגית-מדעית הסובלה בישראל

FONDAZIONE IDIS
CITTA'DELLA SCIENZA

EPS

MIT OFFICE OF DIGITAL LEARNING

Curtin University

Turun yliopisto
University of Turku

INTRASOFT INTERNATIONAL

SCIENCE VIEW

Open Schools for Open Societies (OSOS) **provide innovative ways to explore the world**: not simply to automate processes but to inspire, to engage, and to connect.

Open Schools for Open Societies (OSOS) at the centre of communities: **a space to discover, to share to be called also home.**

Open Schools for Open Societies (OSOS) **a place to teach, to learn, to share and to jointly build a more fair and literate society**. A space to learn beyond our imagination. A place to prepare for the challenges of the future.

Design Thinking Process and UDL Planning Tool

goo.gl/OVOhOn

Barbara Bray
@bbray27

Jackie Gerstein
@jackiegerstein

Quais são os desafios e oportunidades existentes na sua comunidade?

Migrantes

Criminalidade

Refugiados

Como pode a comunidade local contribuir para a formação dos seus cidadãos?

Quais são as peças inovadoras ?

- Formação
- Ferramentas
- Recursos
- Metodologias
- Criatividade
- Colaboração
- Ideias
- ……..

Please, fill all the steps to submit your Reflection

MANAGEMENT LEVEL | PROCESS LEVEL | TEACHERS' PROFESSIONAL DEVELOPMENT

Vision and Strategy	The school is planning to develop a strategic plan in order to become an open school.	The school has already developed a vision on how to become an open school. Mechanisms for implementations of the vision are being currently developed while teachers are involved in the process.
	The school has begun implementing activities according to the defined Open School Approach.	The open school approach is already integrated in all the activities of the school.

Open Schools for Open Societies

Open Schooling Roadmap

A Guide for School Leaders and Innovative Teachers

Students Study Volcanoes

summary

BE ECO + : Find solutions in our school to reduce our carbon footprint

summary

Climate change and Thermology

summary

DARK SKIES RANGERS - How can schools fight light pollution?

summary

Islands Diversity for Science Education

IDiverSE
island diversity

summary

Precision Agriculture

summary

DARK SKIES RANGERS - How can schools fight light pollution?

School: none

Teacher: NUCLIO

No of students participated: 0

Subject domain: Mathematics, Physics, ICT, Engineering, Technology, Publishing on the web, Finding things out, ICT opportunities, Technology

Contact info

Feel | Imagine | Create | Share

Description

During the **Feel** phase, the teacher will **introduce students to the problematic of light pollution**. Students will learn concepts related to the topic, and will organise individual or group field visits to places they will identify as potential sources of light pollution. They will also learn about the magnitude system used in Astronomy to measure the apparent brightness of celestial bodies and will use *Stellarium* to help them to characterise the level of light pollution in their surroundings.

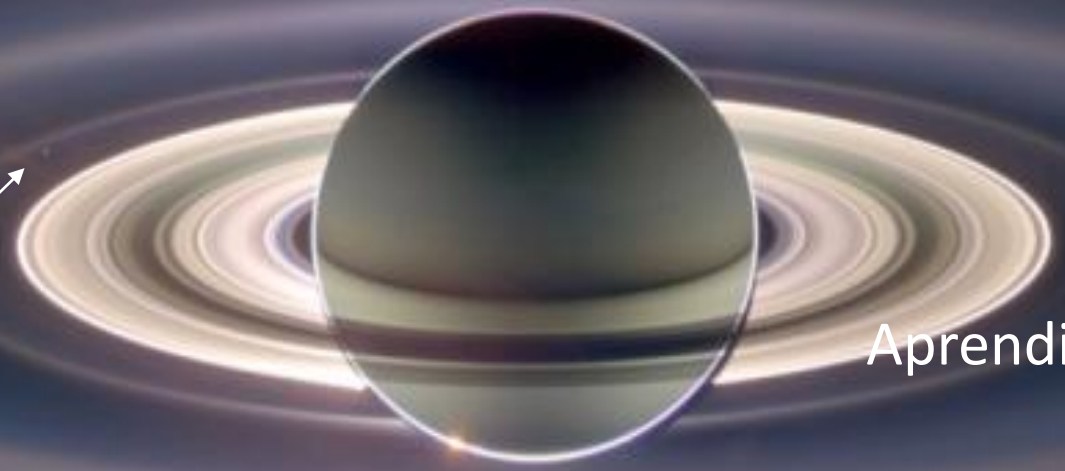
This phase includes **four sessions of 50 minutes estimated time** each. For all sections, teacher should not give immediate answers, but allow students to research for the topics in question, encouraging them to share and discuss their findings with their colleagues, promoting debate in the classroom.

Resources needed

- Computers with access to the Internet;
- Pencil and paper to write on;
- Star charts;
- Internet resources: Globe at Night, ODS portal;
- Luxmeter (optional).

Aprendizagem Holística

Literacia Científica e Consciência Global



Autonomia

Interdiscipinaridade

Aprendizagem centrada no aluno

Profissões futuras

Colaboração a nível nacional e internacional

Articulação horizontal e vertical

A comunidade escolar como a continuação das nossas casas

Visão humanista do nosso planeta como um conjunto diverso e rico de seres que coexistem

Etc.

Fantástico!!!! E como conseguir isso tudo ?!?!?!?

Stories of Tomorrow

Students Visions on the Future of Space Exploration

HOME ABOUT US RESOURCES NEWS CONTACT

Funded by the H2020 Framework Programme of the European Union

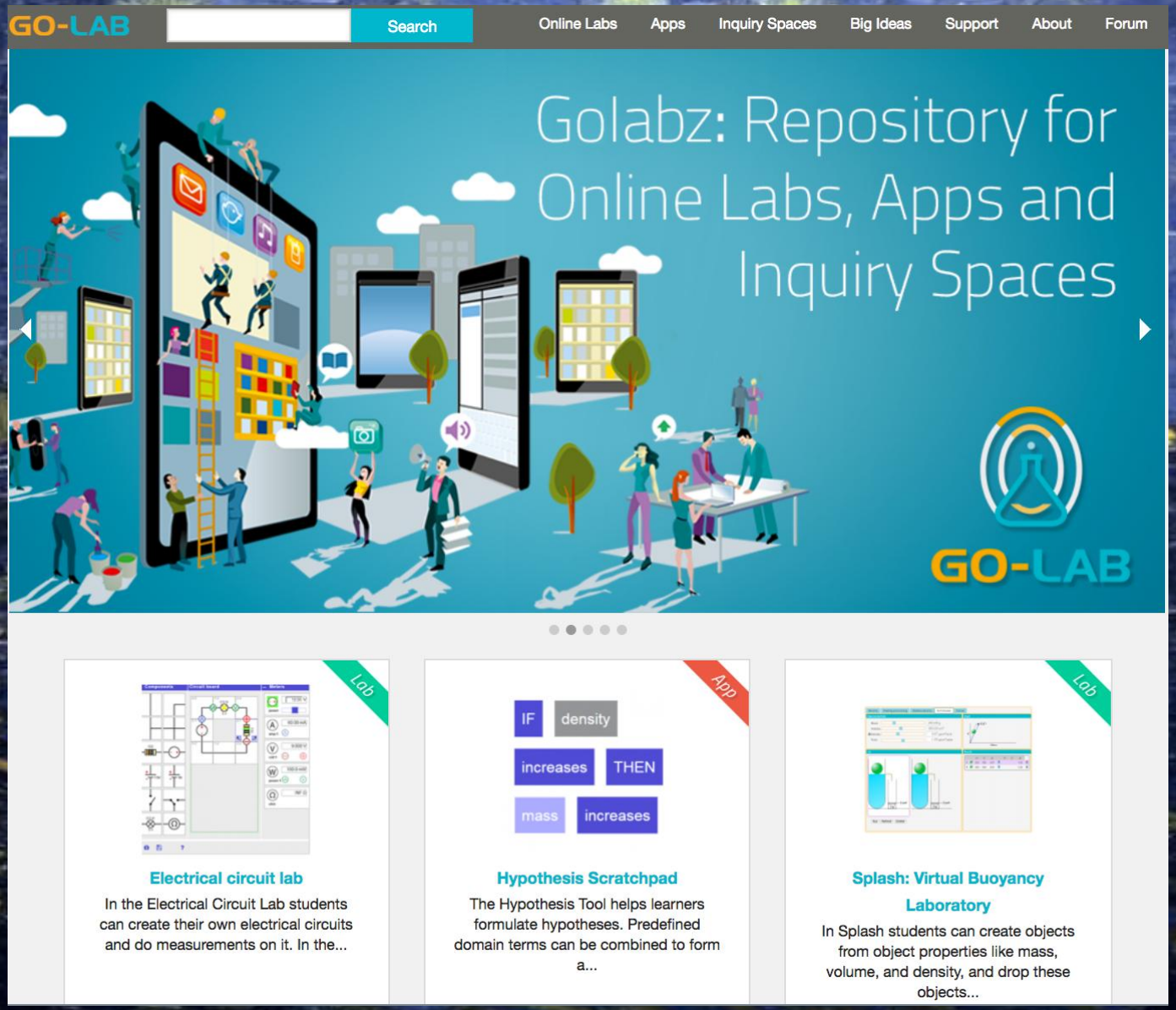
PLATON

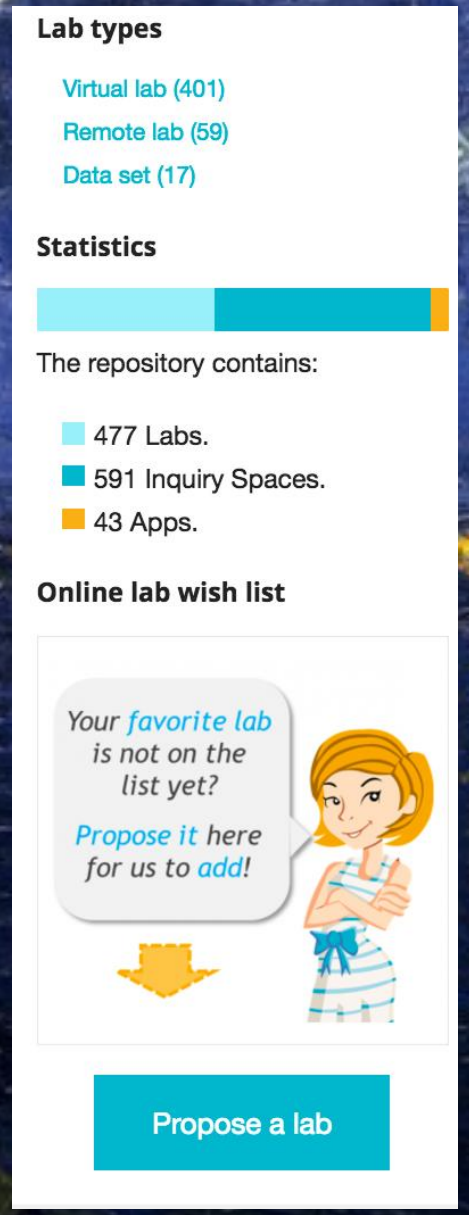
PLATON: Promoting Learning Approaches for the Teaching of Natural Sciences

Framework for IBL and the Big Ideas of Science

Co-funded by the Erasmus+ Programme of the European Union

GO-LAB





Next-Lab project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731685.

Oportunidades Internacionais
European Science Education Academy
esea.ea.gr

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FAULKES TELESCOPE

EPS

INSPIRING SCIENCE EDUCATION ACADEMY 2016

Open Schools for Open Societies

ESA - GTTP SPACE AWARENESS WORKSHOP

THE MARS MISSION

ASTRONOMY ADVENTURES IN CANARY ISLANDS

BEYOND EARTH ORBIT

STORIES OF TOMORROW

SCIENCE THROUGH SPACE & TIME

CREATIONS
Developing an Engaging Science Classroom

IAU

100 Years: Under One Sky

100th Anniversary
1919 Solar Eclipse

50th Anniversary
Moon Landing

Open Schools for Open Societies

Open Astronomy Schools

wakayama univ.

NATIONAL OPTICAL ASTRONOMY OBSERVATORY
NOAO
TUCSON, ARIZONA • LA SERENA, CHILE

inspiring SCIENCE education

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ΑΙΕΝ ΑΡΙΣΤΕΥΕΙΝ
ΕΛΛΗΝΟΓΕΡΜΑΝΙΚΗ ΑΓΩΓΗ

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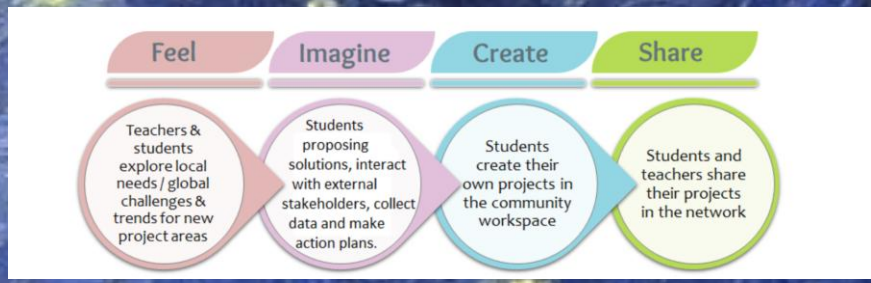
G-HOU

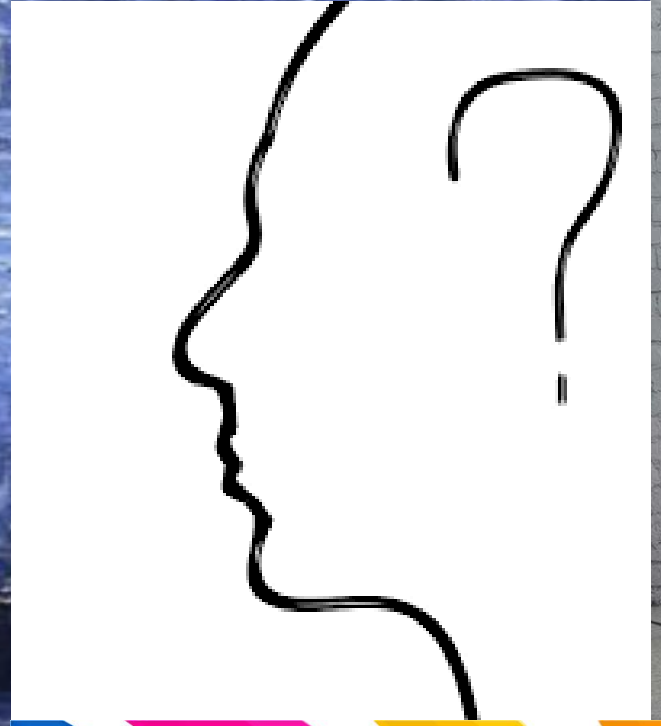
GALILEO
Teacher Training Program

Principais Projetos

- Teacher Training 100
- 100 Astronomy Tools and Resources
- Design Thinking with Stars
- Eratosthenes Experiment
- 100 Astronomy Images
- My Sky
- 100 analemas
- 100 Moons
- 100 Exoplanets
- 100 Asteroids



SCIENCE ON STAGE
FESTIVAL
2019
CASCAIS
PORTUGAL
SKILLS FOR THE FUTURE
31 OCTOBER – 3 NOVEMBER 2019

Escolas do século 21 com professores do século 21 a preparar cidadãos do século 21.

Consegue redesenhar a sua escola ?!?!