

TEACHING FOR ACTION: CHANGING ATTITUDES TO PROMOTE THE SUSTAINABLE DEVELOPMENT GOALS THROUGH CHALLENGE-BASED LEARNING

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Universitat d'Alacant
Universidad de Alicante



Associate Professor of the
Faculty of Education at the
University of Alicante.

Teaching for 11 years Science
Education and Education for
Sustainability for pre-service teachers.



Project on Challenge-Based
Learning of International
Cooperation last 5 years.



Academic Coordinator of the
Teacher Training Program of the
Institute of Education Sciences
at the University of Alicante.



BEFORE STARTING:

**WE ARE GOING TO TELL OTHERS WHAT ARE
YOU TEACHING AT THE UNIVERSITY**



Mentimeter

Go to menti.com and use the code...



WHAT WE ARE GOING TO ADRESS IN THESE SESIONS?

Session I

Contextualization of the need to address Education for Sustainable Development within the framework of the Sustainable Development Goals.



Challenge-Based Learning as a Methodology for Education for Sustainable Development

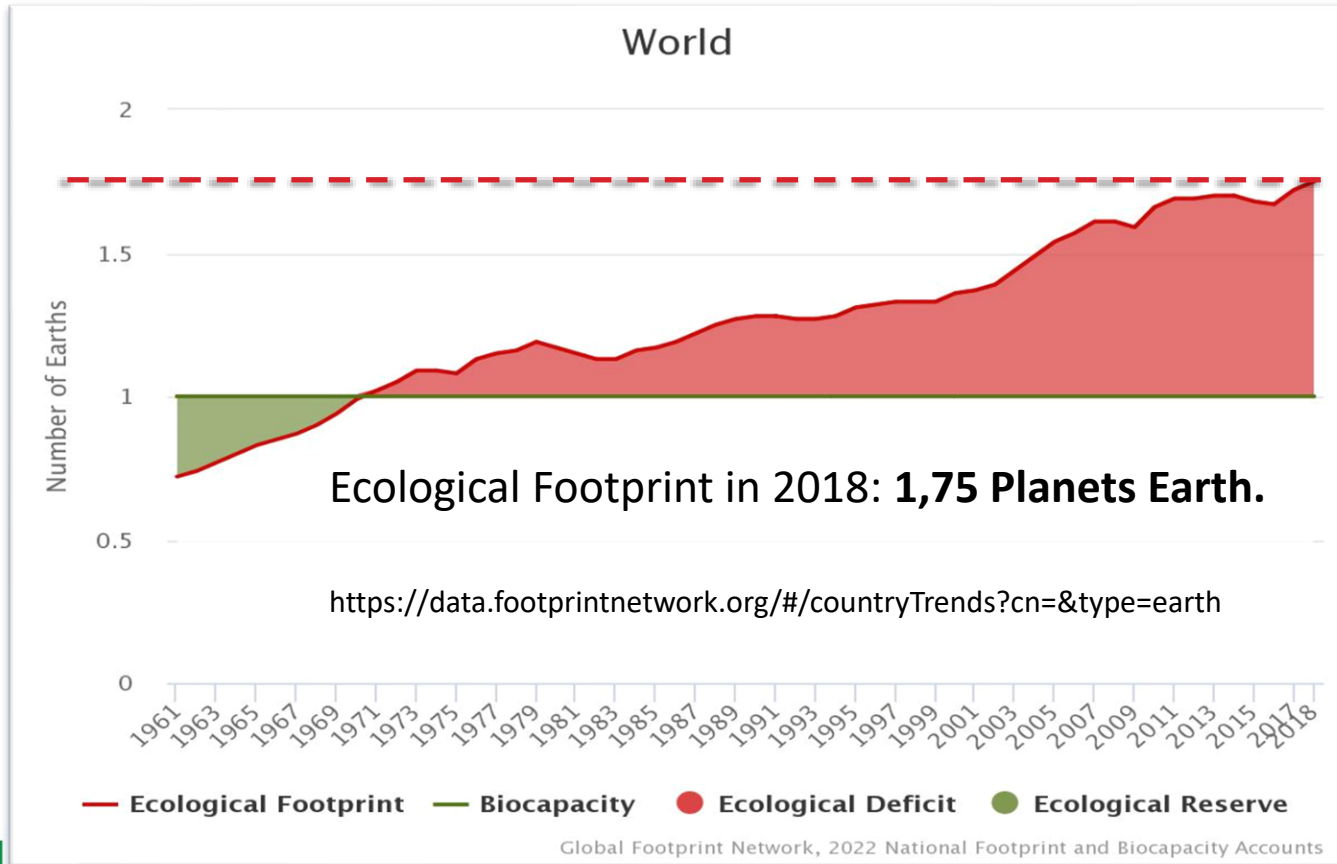


Session II

An example of the Challenge-Based Learning to learn Education for Sustainable Development with pre-service teachers.



PLANETARY BOUNDARIES



GLOBAL EMERGENCY SITUATION

**Massive
exploitation of
natural
resources**

**Biodiversity
loss**



GLOBAL EMERGENCY SITUATION

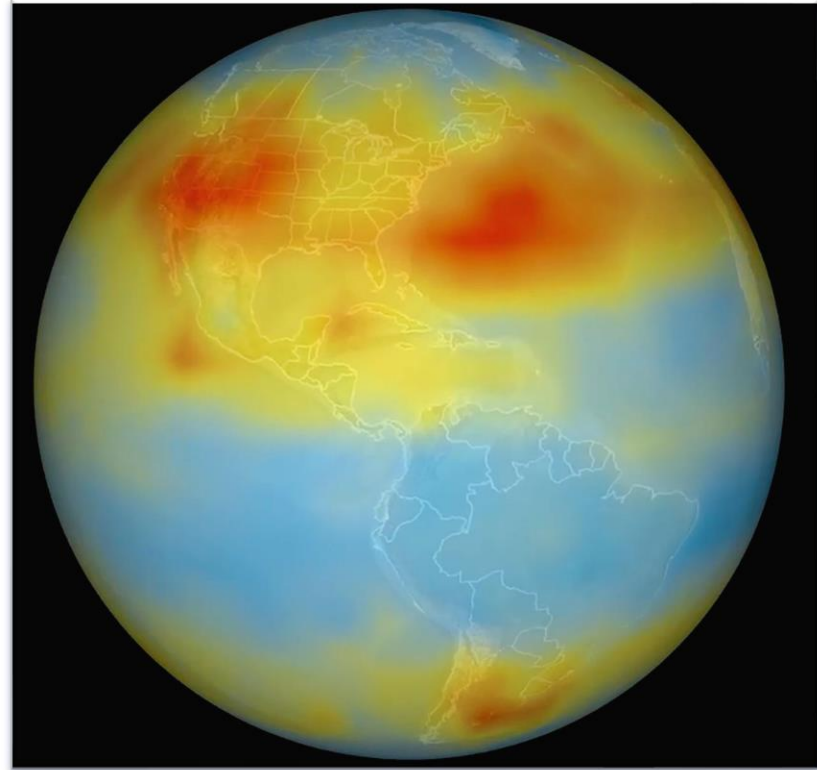
Environmental degradation



PEW Research Center. Dimitar Dilkoff AFP via Gett
<https://www.pewtrusts.org/es/trust/archive/fall-2020/confronting-ocean-plastic-pollution>

Global warming

Dioxide concentrations in the Northern Hemisphere.
NASA/Goddard Space Flight Center Scientific
Visualization Studio/NASA/JPL AIRS Project.
Natural Resources Defense Council.
<https://www.nrdc.org/stories/global-climate-change-what-you-need-know>



GLOBAL EMERGENCY SITUATION

Social inequalities.



Open Arms.@openarms_fund
https://twitter.com/openarms_fund/status/1495338056332857345?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1495338064734040070%7Ctwgr%5E%7Ctwcon%5Es2_%ref_url=https%3A%2F%2Fwww.lavanguardia.com%2Fvida%2Fjunior-report%2F20220302%2F8091619%2Finforme-desigualdad-mundo-pobreza-pandemia.html

GLOBAL EMERGENCY SITUATION

**International
conflicts for the
control of resources.**



United Nations News. Photo: ACNUR /I. Prickett
<https://news.un.org/es/story/2015/07/1335681>

INEXCUSABLE STARTING POINT FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT.GLOBAL EMERGENCY SITUATION



Photo: Asuncion Menargues



SUSTAINABLE DEVELOPMENT GOALS



WHAT ARE THE SUSTAINABLE DEVELOPMENT GOALS?



SUSTAINABLE DEVELOPMENT GOALS



WHAT IS IMPORTANT TO ADDRESS THE EDUCATION FOR SUSTAINABLE DEVELOPMENT?



AREAS OF ESD



United Nations Educational,
Scientific and Cultural Organization



UNIVERSITY HAS TO...



Transversal competences in university curricula



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Scientific and Cultural Organization



Learning content:

Climate change, biodiversity, disaster risk reduction, and sustainable consumption and production.

UNESCO, 2014. *Roadmap for Implementing the Global Action Program on Education for Sustainable Development*. <https://unesdoc.unesco.org/ark:/48223/pf0000230514>



United Nations Educational,
Scientific and Cultural Organization



Pedagogy and learning environments:

Design teaching and learning in an interactive, learner-centred way to foster exploratory, action-oriented and transformative learning, rethinking learning environments to inspire learners to act for sustainability.

UNESCO, 2014. *Roadmap for Implementing the Global Action Program on Education for Sustainable Development*. <https://unesdoc.unesco.org/ark:/48223/pf0000230514>



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Learning outcomes:

Stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations.

UNESCO, 2014. *Roadmap for Implementing the Global Action Program on Education for Sustainable Development.*
<https://unesdoc.unesco.org/ark:/48223/pf0000230514>



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Societal transformation:

Empowering learners to transform themselves and the society they live in.

- Enabling a transition to greener economies and societies.
- Empowering people to be 'global citizens' who engage and assume active roles to face and to resolve global challenges becoming proactive contributors creating a more just, peaceful, tolerant, inclusive, secure and sustainable world.

MAIN GOALS OF ESD



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Objective 1 “to reorient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development”

Objective 2 “to strengthen education and learning in all agendas, programmes and activities that promote sustainable development”

UNESCO, 2014. *Roadmap for Implementing the Global Action Program on Education for Sustainable Development*. <https://unesdoc.unesco.org/ark:/48223/pf0000230514>



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UNIVERSITY HAS TO...



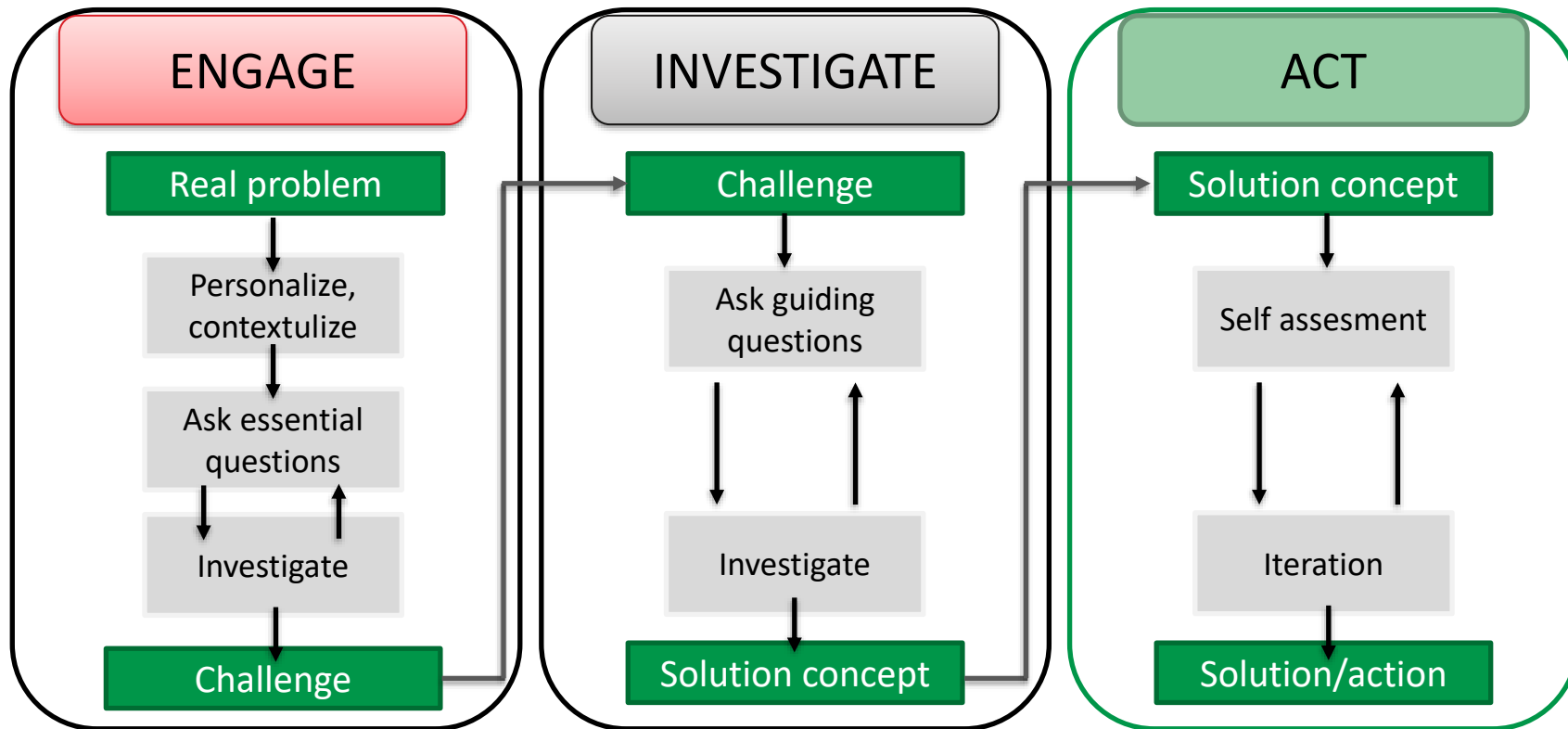
Innovative methodologies that promote critical thinking and creativity to take decisions in a democratic society to promote equity and justice

UNIVERSITY HAS TO...



Promote multiple learning spaces to learn in different contexts

CHALLENGE-BASED LEARNING (CBL)



AN EXAMPLE OF CHALLENGE-BASED TEACHING

LET'S SEE AN EXAMPLE

EDUCATION FOR HEALTH, RESPONSIBLE CONSUMPTION AND CARE FOR THE ENVIRONMENT.

UNDERGRADUATE
SCHOOL TEACHERS

Education for
responsible
consumption

Block I



Environmental
Education

Block II



Health
Education

Block III



CHALLENGE-BASED
LEARNING

UNIVERSITY HAS TO...

LEARNING
SUSTAINABLE
CONSUMPTION AND
ENVIRONMENTAL
EDUCATION
THROUGHOUT A
MOBILE PHONE
CYCLE.



Illustration: Ana Jerez Aullo, from her tale entitled "Aishia"

BEFORE STARTING:

LET'S GO TO MAKE A SELF REFLECTION
ABOUT CONSUMPTION.



Mentimeter

Go to menti.com and use the code...

BEFORE CONTINUING:

Let's go to check how much you know about natural resources and conflicts using the example of a smartphone.

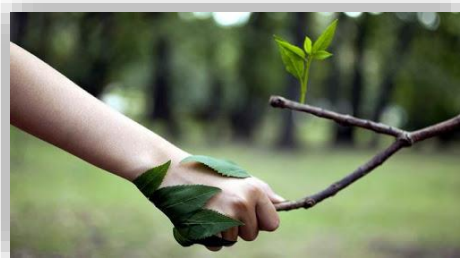
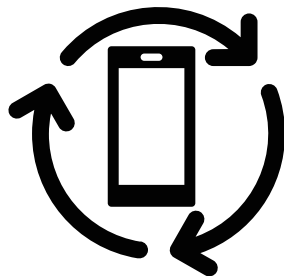
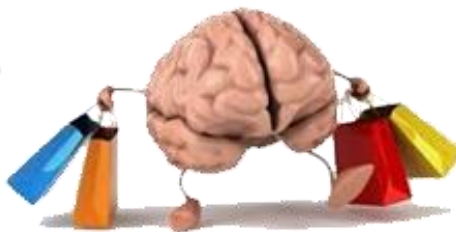


Kahoot!

Go to kahoot.it and use the code...

GOALS OF THE CHALLENGE-BASED LEARNING PROJECT

1



2



3



NGO Alboan. Free Conflict Technology Project.

<https://www.alboan.org/es/actualidad/empresas-y-organizaciones/salto-systems-apoya-el-acceso-la-educacion-de-calidad-en-id>

STAGES OF THE CHALLENGE-BASED LEARNING PROJECT

1. Awareness of the social and environmental problems.



2. Questions that guide the research.

- What is the life cycle of the mobile phone?
- What are the environmental and social implications?



3. Information search.



4. Communication of the research results



5. Proposals for action and service



6. Publicising de project



7. Service to the community



AWARENESS OF THE SOCIAL AND ENVIRONMENTAL PROBLEMS

- Viewing the documentary film *City of Joy*. Gavin, M. (Director). 2016. *City of Joy*. Essence Road, Impact Partners. Netflix.
- Viewing the documentary *El negocio del coltan*. Aldama, Amigo, P., Armenteros, D. (Executive Producers) & Aldana, L. (Director). 2015. *En tierra hostil: el negocio del coltán*. Verte



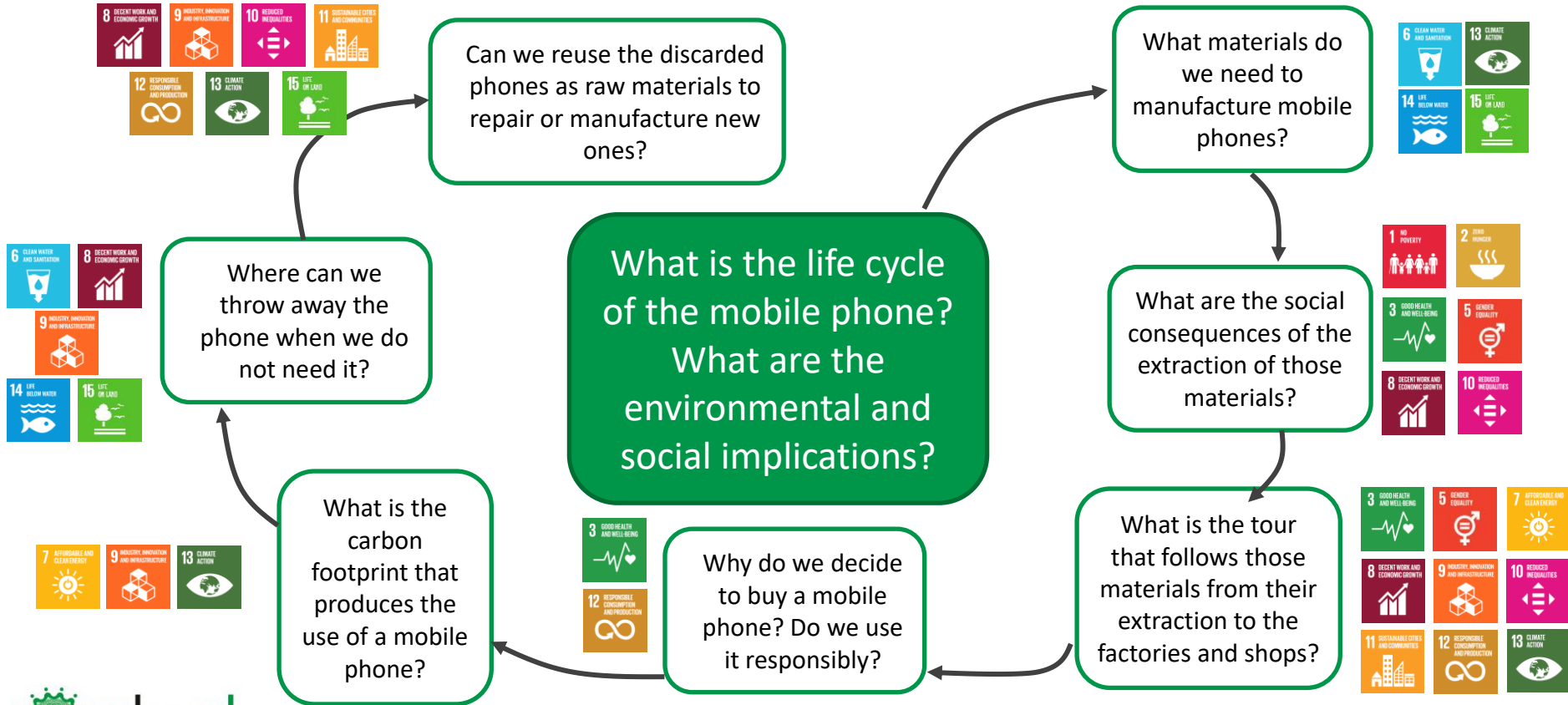
City of Joy frame. Netflix.



El negocio del coltan frame.
DocumaniaTV.



QUESTIONS THAT GUIDE THE RESEARCH



COMMUNICATION OF THE RESEARCH RESULTS



Photo: Asuncion Menargues



Photo: Asuncion Menargues

PROPOSALS OF ACTION AND SERVICE



Photo: Asuncion Menargues



What can we do to raise awareness of the responsible consumption of phones and help the affected people by the coltan extraction?



Photo: Isabel Luján

PUBLICISING THE PROJECT

Posters



Poster made by students (2020)

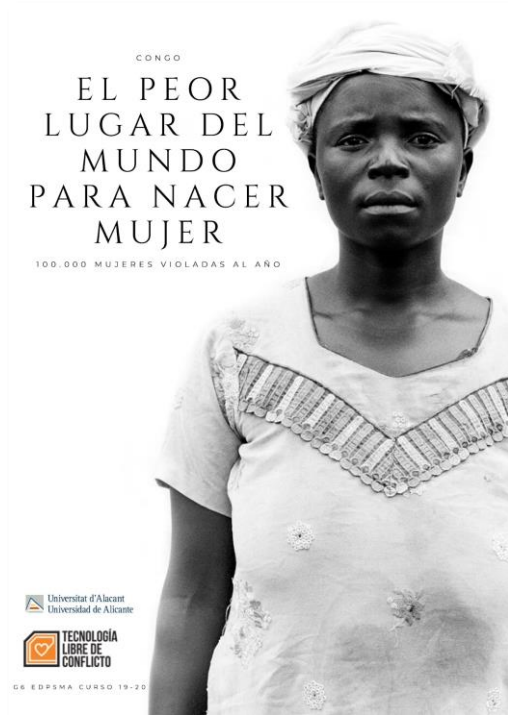
Collecting boxes



Collecting boxes made by students

PUBLICISING THE PROJECT

Posters for the Women's Day



PUBLICISING THE PROJECT

Social media



La UA colabora-
tecnología libre
de conflicto



La UA
colabora
TLC



VIDEOS



Videos made by students

PUBLICISING THE PROJECT



Photo: Asuncion Menargues



University of Alicante Museum. Photo: University of Alicante



Photo: Asuncion Menargues



Photo: Museum of the University of Alicante

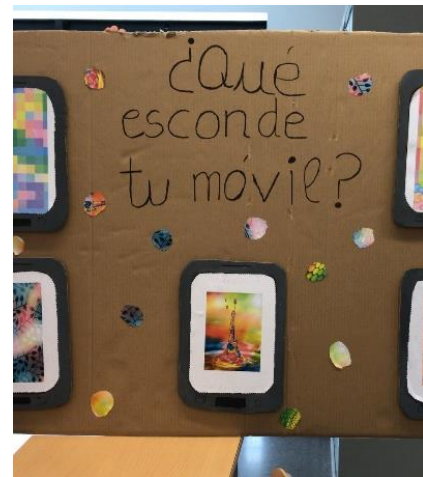


Photo: Asuncion Menargues



SERVICE TO THE COMMUNITY

More than 140Kg of
phones collected

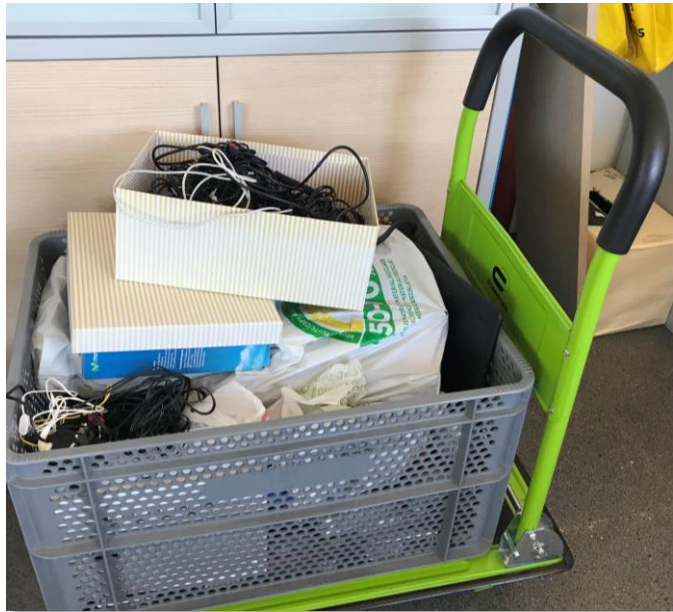


Photo: Asuncion Menargues



ALBOAN

Service to the
communities affected by
the coltan extraction



NGO Alboan. Free Conflict Technology Project

HOW DO TEACHERS ASSESS KNOWLEDGE AND ATTITUDES ACHIEVED BY STUDENTS?

Assessment rubric

Rationale and background	Do the group justify properly the topic? Have they contextualized the work properly? Additional comments
Goals	Have they presented the goals of the work? At the end of the work, have they addressed the goals raised?
Methodology	Instruments used for making the work Are the instruments used enough to achieve the goals of the work?
On the research results	Do they present their research results in a clear way? Is there anything that could be changed about how you have presented the results to expand the information or present them more straightforwardly?
On the conclusions	Have conclusions been presented in line with the results you have given?
On linking the SDGs	Which SDGs have you linked the work to? Could it be linked to any other SDGs? Which one?
Overall assessment	Innovative aspects Quality of the work
Grade	

HOW DO TEACHERS ASSESS KNOWLEDGE AND ATTITUDES ACHIEVED BY STUDENTS?

Pre and post questionnaire

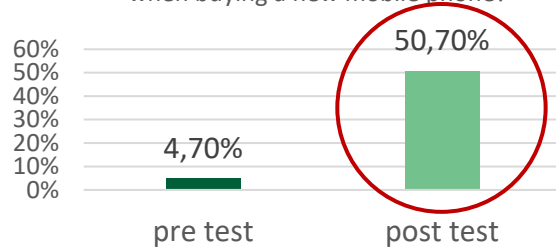
1. What do you think should be considered when buying a new mobile phone?
2. What would you say to a friend who wants to buy a new phone?
3. What do you usually do with mobiles that are no longer useful?
4. Where can phones be deposited when they are broken or when we don't need them?
5. Do you know what materials are needed to make mobile phones? Which ones do you know?
6. Do you know if the extraction of these materials impacts the people living in the area? Write which ones
7. What would you say to a friend to encourage them to use this technology responsibly and sustainably?

RESULTS OF THE STUDENTS

Average grade
 8.85 ± 0.72 ; n=58

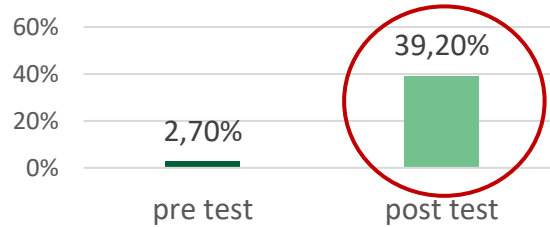


1 What do you think should be considered when buying a new mobile phone?



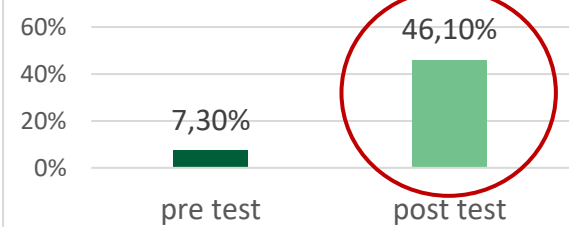
I would consider aspects related to the social and environmental impact.

2. What would you say to a friend who wants to buy a new phone?



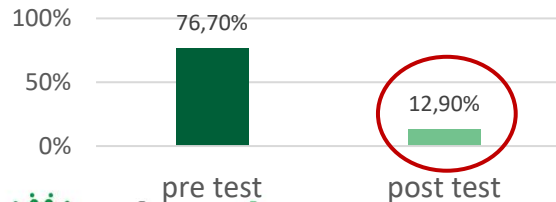
To consider aspects related to socio-environmental impact.

3. What do you usually do with mobiles that are no longer useful?



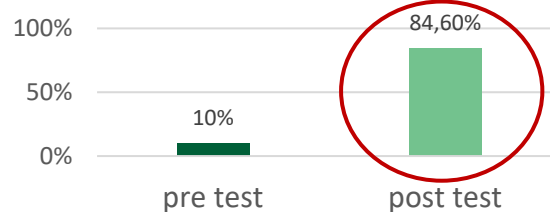
Take it for recycling or donate it to an NGO.

5. Do you know what materials are needed to make mobile phones? Which ones do you know?



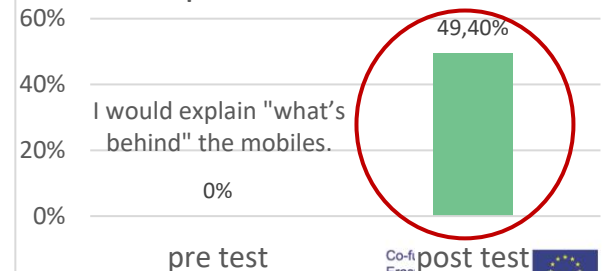
No

6. Do you know if the extraction of these materials impacts the people living in the area? Write which ones



Yes

7. What would you say to a friend to encourage them to use this technology responsible and sustainable?



I would explain "what's behind" the mobiles.

CONCLUSIONS OF THE PROJECT

Throughout this project, our students:



Undergraduates 2019. Photo: Asuncion Menargues

- Achieve deep learning about social and environmental sustainability.
- It has made a change in their attitudes.
- They carried out a service for the communities most affected by coltan mining.

MAKING A RECAP OF YOUR PREVIOUS IDEAS





ALBOAN

Thank you!



dr. Denis
MukwegeFoundation

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Universitat d'Alacant
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