



102 - Climate Change Challenge WebQuests

EnviroHacks



**Building Problem-solving Skills of Youth to Address
Environmental and Climate Change Issues**

IO2 – Climate Change Challenge WebQuests

WebQuest Theme: EnviroHacks

TIME ALLOCATED:	1 week
TITLE OF THE WEBQUEST:	Reducing your Digital Carbon Footprint by Producing a Green T-shirt Online
INTRODUCTION	
<p>“Reducing your Digital Carbon Footprint by Producing a Green T-shirt Online” will challenge young people to come up with their own environmentally friendly gimmick that could reduce their digital carbon footprint.</p> <p>We all store and transfer data almost on a daily basis, but have you ever thought what amount of energy this process requires and what are its effects on the environment? Research has shown that digital technologies now account for 4% of the world’s greenhouse gas emissions. With our streaming, photo-snapping and 5G lifestyle, is estimated to double by 2025!</p> <p>Think of when you back up and store your data on the cloud, it is not literally floating in the sky. On the contrary, it is physical, sitting on a server somewhere in the world. Thankfully, there is a lot you can do to reduce your digital consumption and eventually your carbon footprint.</p> <p>In this WebQuest, you will learn what it means in practice to be a digital minimalist and use information technology and various digital tools to develop a product online in such a way that reduces your digital carbon footprint!</p>	
TASK	
<p>You live in Germany and study Graphic Design in Berlin. Your professor assigns you – in the context of a short-term task – to think along with three other college classmates of an eco-friendly gimmick related to the reduction of carbon footprint.</p>	



You feel absolutely thrilled as you have recently read an article about the environmental impact of digital technologies and would love to think about new innovative ways of tackling environmental problems!

Together, your team decides to take advantage of this knowledge and use sustainable online design software in order to create a green T-shirt that will motivate young people to rethink the way they use digital technologies so as to protect the planet.

At the end of the task, you will run a social media contest asking your followers to choose which one of the final two versions of the T-shirts you have designed, that they like most so as to proceed with its production! Three lucky winners will be crowned the winners of the most “liked” T-shirt when it will be introduced to the market!

So, gather all your creativity and perseverance and get started!

PROCESS

Step 1: What is your digital carbon footprint?

Before you and your team dive straight into the designing ideas of a T-Shirt, you have to educate yourselves around the topic of digital consumption.

Have you ever thought how much energy we use by just clicking on certain webpages, or by streaming our favourite movie online or by being constantly on social media, posting reposting, and pushing the ‘like’ buttons?

When we think of how technology is causing environmental damages, we often focus on physical things like using a computer or making a call, instead of its rather ‘invisible’ counterpart - the internet.

What we mean by the term: “digital carbon footprint”? Discuss this term with your team. How do you think it accumulates and what are its causes and implications?

Some useful links that can facilitate your research and discussion on the topic of “digital carbon footprint” are:



- What is the carbon footprint of the internet?:
<https://www.sciencefocus.com/science/what-is-the-carbon-footprint-of-the-internet/>
- The World's Digital Carbon Footprint: #TheCoalTruth:
<https://www.youtube.com/watch?v=fHDjTgYHDRl>
- What's the carbon footprint of ... the internet?:
<https://www.theguardian.com/environment/2010/aug/12/carbon-footprint-internet>

The transmission of data via the internet can be very polluting, contributing to 4% of our greenhouse gas emissions. This is because it is a process that requires millions of physical servers in data centres around the world, all taking a lot of energy to run. Unfortunately, much of that energy comes from power sources that emit carbon dioxide into the air. Learn more on how your social media, gaming or streaming habits impact the climate by following the links:

- The carbon footprint of the digital sector:
https://www.europarl.europa.eu/doceo/document/E-9-2020-001324_EN.html
- Our Digital Carbon Footprint: What's the Environmental Impact of the Online World? <https://en.reset.org/knowledge/our-digital-carbon-footprint-whats-the-environmental-impact-online-world-12302019>

Here is an interesting infographic which will help you to get familiarised with the complexities of the topic:

- The Carbon Footprint of the Internet:
<https://www.informationisbeautifulawards.com/showcase/1015-the-carbon-footprint-of-the-internet>

It seems like every time we use the internet or social media; a small amount of carbon is being emitted. While one single person's usage only generates a small amount of carbon dioxide, the collective amount of carbon emissions of the world's digital usage is monstrous - and worrying, isn't it?

Exchange your insights about internet and social media use, and how this usage affects the environmental carbon footprint. Try to map out the most essential points of your discussion with your colleagues by developing a mind map.



A mind map is a diagram used to visually organise information. It is often created around a single concept, drawn as an image in the centre of a blank page, to which associated representations of ideas such as images, words and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas.

The following articles provide you with various online resources that can be used to create as a team your inspired mind map and store the information gathered in a creative way:

- 29 Free & Top Mind Mapping Software: <https://www.predictiveanalyticstoday.com/top-free-premium-mind-mapping-software/>
- The best mind mapping software in 2020: <https://zapier.com/blog/best-mind-mapping-software/>

While working as a team on this mind map, take into consideration that during implementing your assigned task you have to be aware of the impact your online activities will have on the planet!

Step 2: How much is your digital carbon footprint?

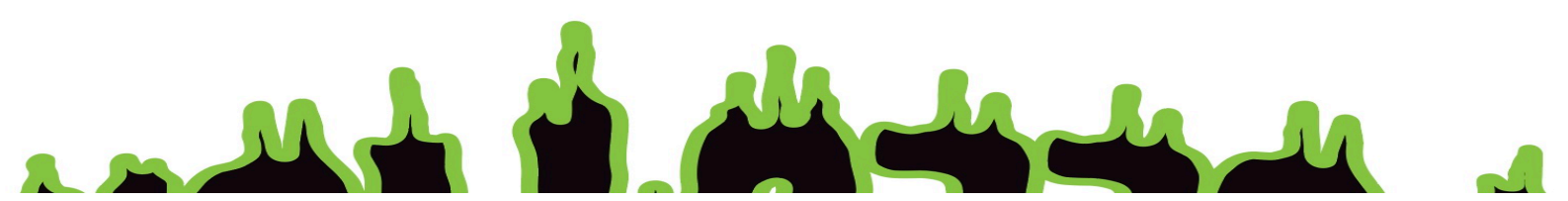
Well done! You did a great job in researching about the digital carbon footprint. Now it's time to dive more into the data and find out more about your digital carbon footprint.

Have you ever thought how much carbon emissions a Google search creates? You will be surprised! The article "The Environmental Cost of your Internet Searches" presents how the artist Joana Moll visualized the amount of carbon every single Google search emits:

- The Environmental Cost Of Your Internet Searches, Visualized: https://www.fastcompany.com/90171268/internet_impact_visualized

Sending emails, making a quick call on WhatsApp, uploading some photos to the cloud, watching a short viral clip on YouTube: it is all part of the digital daily life around the world. For everyone of us, it may be "just one photo" or "just a few minutes of video," but, taken together our collective internet traffic contributes enormously to climate change.

The following web pages provide some interesting facts about our Netflix "binge-watching" habits and for sure it's worth reading:



- Factcheck: What is the carbon footprint of streaming video on Netflix?: <https://www.carbonbrief.org/factcheck-what-is-the-carbon-footprint-of-streaming-video-on-netflix>
- The carbon footprint of streaming video: fact-checking the headlines: <https://www.iea.org/commentaries/the-carbon-footprint-of-streaming-video-fact-checking-the-headlines>
- Is Netflix bad for the environment? How streaming video contributes to climate change: <https://www.dw.com/en/is-netflix-bad-for-the-environment-how-streaming-video-contributes-to-climate-change/a-49556716#>

Now it's about time to become more conscious about your digital carbon footprint. Learn how to calculate it, as it's of much importance for the task you have to accomplish.

So, what's your digital carbon footprint?

- Evaluate the carbon footprint of your internet usage: <https://ecotree.green/en/calculate-digital-co2>

You can also check the digital carbon footprint of some of your favourite websites by following the link:

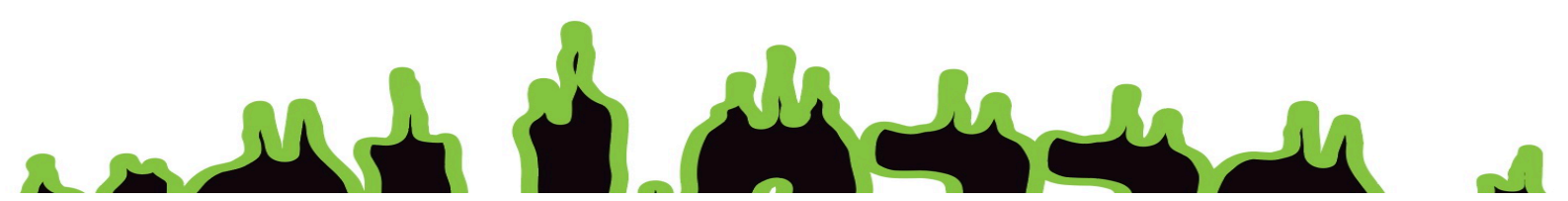
- How is your website impacting the planet?: <https://www.websitecarbon.com/>

Take the mind map you started to develop in step 1 and add more information to it concerning the digital carbon footprint of your daily habits.

Step 3: How to keep up with digital minimalism?

You have learned so far what digital carbon footprint is and how it is emitted by our daily digital habits. You managed also to calculate your digital carbon footprint and incorporate your research findings into a mind map. But why is so important to reduce our digital carbon footprint and how can you achieve this goal?

It's tempting to stay glued to our screens in times of global turmoil but reducing your web-based emissions can be as simple as adjusting your settings. Digital pollution has no smell, no colour, and no apparent trace, but it is a reality. It is quite clear that going back to pen



and paper is not an option, but we can minimise our carbon footprint by making small, simple changes that can help to reduce carbon dioxide emissions.

Here are some links for you to learn how to be efficient and green at the same time while surfing the internet and working with online tools:

- Eight ways to reduce your digital carbon footprint: <https://blog.mozilla.org/firefox/digital-carbon-footprint/>
- How to lower your digital carbon footprint: <https://blog.arcadia.com/internet-carbon-footprint/>
- Going green: How to Reduce Digital Pollution: <https://www.welcometothejungle.com/en/articles/how-to-reduce-digital-pollution>
- How to Reduce Your Digital Carbon Footprint?: <https://www.bioenergyconsult.com/how-to-reduce-digital-carbon-footprint/>
- 6 Easy Ways to Reduce Your Internet Carbon Footprint: <https://Myhappyfootprint.Com/Reduce-Internet-Carbon-Footprint/>

Now you know how to reduce your digital carbon footprint!

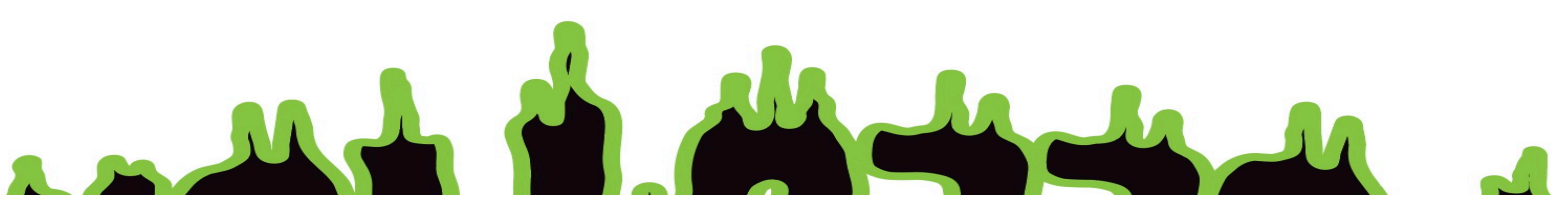
Go back to your mind map and continue adding branches that will support your team's decision on what kind of software to use for designing your green T-shirt, how much time you have to spend on using it and how to implement a social media contest so that your digital footprint to be as low as possible during this process.

Step 4: Design your Green T-Shirt!

Time has come to immerse yourselves in creative thinking and innovative solutions! You have learned how to be sustainable in the digital world. Now you are ready to put your knowledge into practice!

Remember that you are working together with your groupmates on the goal to design a digitally sustainable green t-shirt to raise awareness on the issue of the digital carbon footprint!

It's probably the first time you are faced with the challenge of designing a T-shirt. To successfully go through this process carefully read the guidelines that follow:



- How to design a t-shirt: the ultimate guide: <https://en.99designs.de/blog/design-other/how-to-design-t-shirts/>

T-shirt design is a hugely popular outlets for creatives. Putting your designs on T-shirts can be hugely appealing. The following links provide you with some expert advice to get you started in T-shirt design or/and improve your skills:

- 10 pro tips for creating better T-shirt designs: <https://www.creativebloq.com/design/guide-t-shirt-printing-designers-912867>
- How To Design a T shirt Graphic In 5 Minutes In Adobe Photoshop: <https://www.youtube.com/watch?v=DXrO16NrWo8>

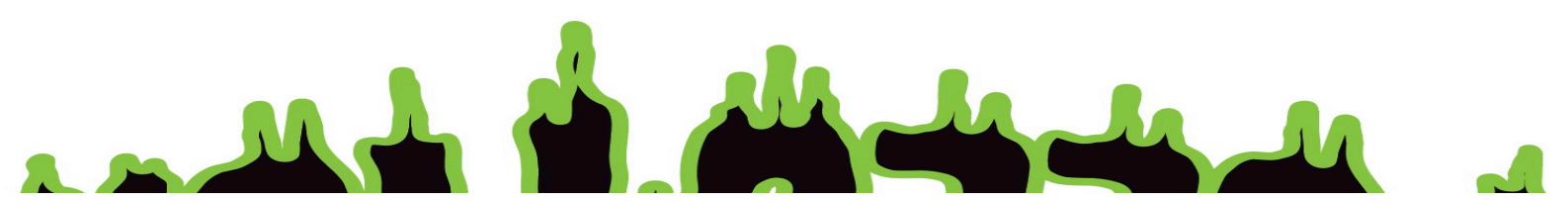
Or how about listening to the following resource, in German:

- Wie du ein T Shirt Design erstellen oder mit Programmen zeichnen kannst: <https://www.youtube.com/watch?v=URET0snA8sg>

Some free online software that can be used for the purpose of designing your T-shirt that will attract the young people's attention to the issue of digital pollution and make them rethink their digital behaviour can be found at:

- Best Free T-Shirt Design Software in 2021: <https://designshack.net/articles/software/free-t-shirt-design-software/>
- Design your T-Shirt, by Vexls free online T Shirt maker: <https://www.vexls.com/t-shirt-design/>
- Design Your T-Shirt for Free in Minutes: <https://spark.adobe.com/make/t-shirt-design/>
- 12 Free Photo-Editing Tools to Use For T-Shirt Designs : <https://wunderlabel.co.uk/blog/p/12-free-photo-editing-tools-use-t-shirt-designs/>

Devote time to add all this information to your mind map. Try a brainstorming session to come up with the most effective choice regarding the software you are going to use for designing your environmentally friendly t-shirt that will serve as a call-to-action for reducing the digital carbon footprint. The next step is to make up your mind about the design itself. What typography and colours are you going to use? What style and imagery? You have also to reach a decision concerning some other aspects, such as production materials, printing machine and colouring.



Some useful links that will support your decisions are:

- Production Steps: <https://www.green-shirts.com/en/production>
- What Does It Mean To Be A Sustainable T-Shirt Printing Company?: <https://www.printlocker.com.au/blog/4-things-to-look-for-in-a-sustainable-tshirt-printing-company/>
- Organic T Shirt Printing: <https://blackwaterstudios.co.uk/organic-t-shirt-printing/>
- 8 Reasons Why T-Shirt Printing Business Will Trend In 2021: <https://www.designhill.com/design-blog/reasons-why-t-shirt-printing-business-will-trend/>
- How to Start an Online T-Shirt Business: Everything You Need to Know: <https://www.shopify.com/blog/start-online-tshirt-business>

Don't forget that your mind map will back up your decision process! Take into consideration all the things that you learned and start developing your sustainable t-shirt!

At the end of this step, you will have to come up with two designed versions of a green t-shirt that will be used in your contest.

Step 5: Develop your Social Media Contest!

The time has come to introduce your audience to the two designed versions of your green t-shirt and let them do the hard job in a fun way! The hard job is choosing one of the two designs that is finally going to be commercialised.

The best way to reach your goal is by creating and running a social media contest. Here are some of the benefits of social media contests and how you should consider running a contest for completing the task your professor has assigned to your team:

- 6 Benefits of Running Social Media Contests: <https://nealschaffer.com/6-benefits-of-running-social-media-contests/>
- 5 Benefits of Running Social Media Contests: <https://www.lifehack.org/496089/5-benefits-of-running-social-media-contests>

As many benefits as there are, running a successful social media contest is easier said than done. It is essential that your contest does not simply give away something to your followers. Three lucky winners will take as a prize as having the most "liked" T-shirt when



it will be introduced to the market. It will also help you to achieve a real impact and reach your team objectives.

Even if you are launching a social media contest for the first time, or if you would like to ensure your current campaign has been done well, these step-by-step instructions will guide you through the process:

- How to Run a Social Media Contest: A Complete Guide: <https://blog.iconosquare.com/how-to-run-a-social-media-contest/>
- 7 Steps to Run a Social Media Contest That Converts like Crazy: <https://heyorca.com/blog/content-strategy/7-steps-social-media-contest/>
- How to create successful social media contests that convert: <https://sproutsocial.com/insights/social-media-contests/>
- How to Run a Social Media Contest That Gets Tons of Engagement (11 Contest Ideas): <https://blog.hubspot.com/blog/tabid/6307/bid/33352/everything-you-need-to-run-a-successful-social-media-contest.aspx>

There are so many rules and guidelines and so much planning and preparation involved, aren't there? Before starting to design and run your contest, get inspired by checking these 20+ Creative Social Media Contest Ideas and Examples:

- 20+ Creative Social Media Contest Ideas and Examples: <https://blog.hootsuite.com/social-media-contest/>

You have all the tools in your hands! Now it's time to create your social media contest on your favourite social media platform and launch it!

EVALUATION

As a self- assessment exercise for this WebQuest, please answer to the following questions and share your thoughts and insights with your teammate:

- What were some of the most interesting discoveries my teammates and I made while working on this project? About the problem? About myself? About others?



- What were some of my most challenging moments and how did I manage to overcome them?
- What were some of my most powerful learning moments and why?
- What skills did I acquire through this activity?
- How well did my team communicate overall?
- Were my milestones and goals mostly met, and how much did I deviate from them if at all?
- What would I do differently if I were to approach the same challenge again?

CONCLUSION

Congratulations! You have come to the end of the “EnviroHacks” WebQuest! You have designed an extraordinary green t-shirt, you have introduced it to your audience through a social media contest and you have managed to raise awareness regarding the pressing environmental issues related to the digital carbon footprint!

Climate emergency is one of the greatest challenges facing humanity. Apart from transport, the agro-livestock or heavy industry sectors are major contributors to greenhouse gas emissions. Our digital activity, linked to our traceable digital footprint, also contributes to our carbon footprint. Therefore, we have to make ourselves aware of the detrimental effect our online activities has on earth ecosystem’s deterioration and take action.

There are a lot of behaviours that can change without impacting our final digital experience. Grasp your own impact on the matter of digital pollution and take the initiative to motivate your community to come up with more “EnviroHacks”!

“There is no footprint so small that it doesn’t leave an imprint on this world”

– Unknown author





TUTOR SECTION

On completion of this WebQuest, young people will have achieved the following learning outcomes:

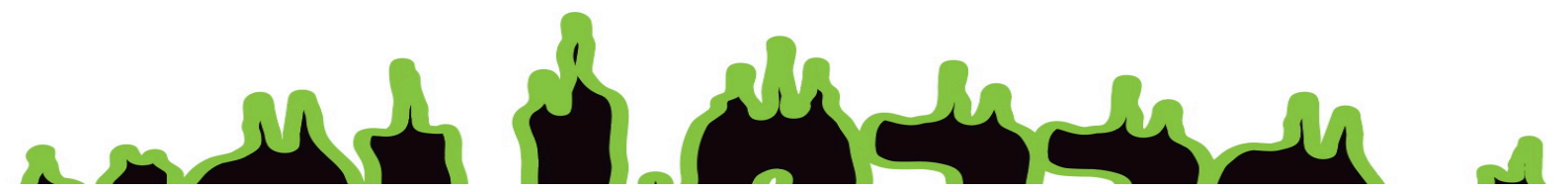
Knowledge	Skills	Attitudes
<ul style="list-style-type: none"> • Basic knowledge of digital carbon footprint. • Basic knowledge of digital minimalism. • Basic knowledge about graphic design ideas and branding that combine eco-friendly and ethically conscious digital consumption. • Factual knowledge of the impact of digital industries on climate change. • Theoretical knowledge of sustainability and 	<ul style="list-style-type: none"> • Define the meaning of the term “digital carbon footprint”. • Define the term “green ethical production” and “digital minimalism.” • Defining ethics and fairness in digital/online industry. • Discuss the environmental, social and ethical aspects of online-business printing services. • Graphic design of a t-shirt . • Use of mind mapping online tools. 	<ul style="list-style-type: none"> • Willingness to be more creative and adventurous when designing new concepts/products. • Openness to new trends in sustainable digital industry. • Awareness of the social, environmental, and ethical aspects of digital/fashion industry. • Willingness to share and promote sustainable way of life with others, by



<p>ethical online production.</p> <ul style="list-style-type: none"> • Factual knowledge about green sustainable trends in digital era. • Basic knowledge of how to design a green t-shirt. • Factual knowledge on how to create and implement a social media contest. • Factual knowledge of developing a mind-map. • Factual knowledge of online research techniques 	<ul style="list-style-type: none"> • Reflect on digital usage habits. • Use of certain tools and techniques for designing and implementing a social media contest. • Use digital tools for finding out about green digital initiatives and contest. • Design a sustainable t-shirt. • Apply ideation methods. • Apply communication techniques . 	<p>following aspirations to combat climate change causes.</p> <ul style="list-style-type: none"> • Openness to combine, mix, and experiment with diverse styles. • Feeling of social responsibility and belonging by contributing to the greater global cause. • Self-empowerment and confidence about social and environmental benefits of sustainable surfing on the internet and using online data. • Eagerness to be creative and innovative by using digital means/tools to stick to sustainable way of life.
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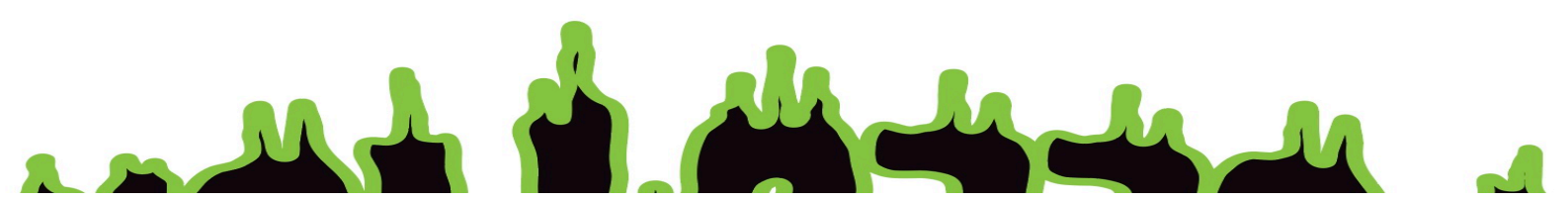
Questions that a youth worker or teacher might use in a whole class discussion to debrief this WebQuest:

- What new knowledge and skills did you gain? Name the 3 most important ones.
- Did you enjoy the whole process of dealing with this WebQuest and developing your end product?
- Are you happy with the end product you have developed?
- What would you improve in your work if you had more time?
- Can you imagine using what you have learned in the future?





- Are you proud of your work?



SOLUTION NOT POLLUTION



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

"The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."
Project Number: 2019-3-IE01-KA205-065708