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European Digital Learning Situation: E-Commerce an its impact on the environment

Target Group	Students in vocational training
Subject/Bundling subject	Economics
Learning Area	Sales
Learning situation	E-Commerce and its impact on the environment

Entry scenario

Due to the COVID-19 pandemic, the *Weltladen* of the Kuniberg vocational college was closed for many months. Through its partnership with Peru, the Weltladen supports young people in their education or provides school meals. Due to the lack of income from the stationary trade, the charitable commitment of *Weltladen* was severely limited.

Now the chairwoman of *Weltladen* has made the decision to use an online store as another distribution channel. In this context, the impact on the environment is to be particularly minimized through sustainable solutions.

Learning outcome/product

- Drawing up a plan of action (with the aid of word processing software)
- Develop criteria for evaluating an online shop
- Writing a homepage article about the impact of online shopping on the environment
- Writing an action plan for the employees of *Weltladen*
- Reflection on the products of action with regard to the use of the contents and media in the professional world of life

Essential competences

Students will be able to evaluate the set up of an online store from an economic and sustainability perspective.

The students …

- can read statistics and derive concrete recommendations for action from them
- apply strategies for reading comprehension and clarify word meanings
- apply text structuring methods independently and use them to structure information
- develop an attitude regarding the influence of e-commerce on the environment
- organize the work process in a team with the help of suitable platforms

Specification of content

- Development of e-commerce sales
- Impact of e-commerce on the environment
- Sustainable e-commerce

– select subject-specific software independently and use it in a contemporary manner – expand their communication skills when presenting their results – reflect on the work process in terms of the use of digital/analog media, teamwork, etc. – reflect on the influence of the hardware/software used on their professional activities.	

Learning and working techniques
The students …

- can select content specifically
- work cooperatively
- present content by means of digital media and platforms
- foster reflection/feedback skills of the working process

Teaching materials

- Instructions
- Information and links/QR-Codes for the reseach

Organizational information
Technical requirements

- PC room with beamer, internet connection and the possibility to use standard office applications
- Alternatively: classroom with WiFi and projector, students use their own devices

Medienkompetenz, Anwendungs-Know-how, Informatische Grundkenntnisse

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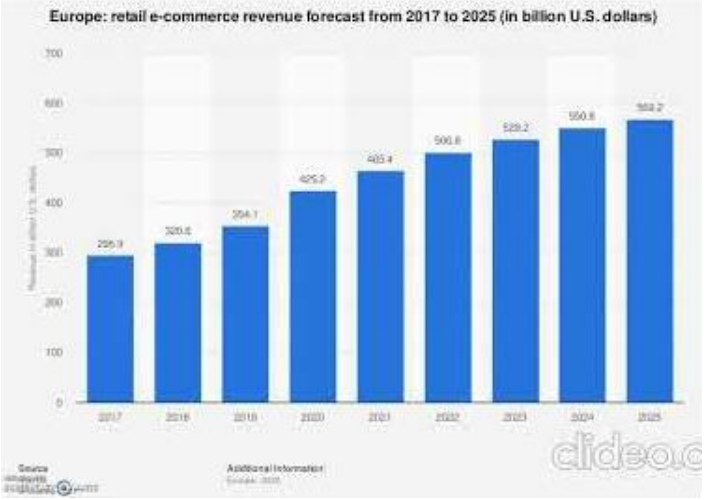
Due to the COVID-19 pandemic, *Weltladen* of the Kuniberg vocational college was closed for many months. Through its partnership with Peru, *Weltladen* supports young people in their education or provides school meals. Due to the lack of income from the stationary trade, the charitable commitment of the world store was severely limited.
Now the chairwoman of *Weltladen* has made the decision to use an online store as another distribution channel. In this context, the impact on the environment is to be particularly minimized through sustainable solutions.

First of all, some considerations would have to be made:
1. Is it possible to achieve the desired increase in sales through an online store?
2. What impact on the environment comes along with an online shop?
3. Which sustainable solutions can be realized by *Weltladen*?

1 Retail e-commerce revenue



Statista Research Department, May 20, 2021

Task

1. Based on the statistics, assess whether *Weltladen* should set up an online store.

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2 The environmental impact of online shopping and Tips for sustainable e-commerce

How climate-friendly is online shopping?

Billions of kilometers of delivery routes, tons of packaging - online shopping leaves its mark on the environment. But shopping downtown is not necessarily better.

Online shopping is extremely in demand

One click: "Confirm order". And two days later, the parcel courier rings the doorbell delivering the desired item. No more "searching around" downtown, no more standing in line at the checkout, no more carrying bags - with online shopping, you don't even have to leave the house. And if you don't like the goods, the return note is right in the package. Online shopping obviously has many advantages.

It's obvious why so many people shop online. Germany lists more than 3.5 billion parcel shipments on average every year. In 2020, the number even rose to over four billion. As a result of the Corona crisis, online retailing has picked up significantly. Since March 2020, sales in mail-orders and online retail have risen significantly and have remained at a high level ever since.

Additional infrastructure

However, what is so convenient for us, generates significantly more effort in retail: the storage, the many additional delivery routes, the large amount of packaging and waste. And often the effort is for nothing. According to the Federal Environment Agency, at least every second package of purchased clothing is returned. Day after day, that's about 800.000 packages, generating emissions of about 400 tons of CO_2. That's equivalent to 255 car trips from Frankfurt to Beijing.
An environmental mess? Definitely. Is that why environmentally conscious people should stop shopping online? Not necessarily.

Online shopping can be more climate-friendly

Ordering products online can actually cause less CO_2 equivalents than shopping in the city. It may be a sad thought that a world with city centers without stores would possibly be more climate-friendly - but mathematically it is comprehensible. The Federal Environment Agency has broken the calculation down and compared the various factors.

The carbon footprint of online shopping is made up of:

- Electricity of the device (cell phone, computer): 5 - 60 grams of CO_2 equivalents
- Energy consumption of the warehouses: 20 - 120 grams of CO_2 equivalents
- Delivery route from the parcel center to the customer: 200 - 400 grams of CO_2 equivalents
- Packaging: 20 - 1000 grams of CO_2 equivalents

For the CO_2 balance, each step of the supply chain must be calculated individually. In online retail, the delivery route matters the most. So it depends a lot on how far the goods have to travel, whether they are still temporarily stored at the parcel center and whether they are returned.

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The carbon footprint of in-store shopping is made up of:

- Energy consumption of store & warehouse: 300 - 4400 grams of CO_2 equivalents
- Customer travel to the store (5 kilometers): 0 - 1000 grams of CO_2 equivalents
- Packaging (for example bag): 30 - 130 grams of CO_2 equivalents

According to the Federal Environment Agency, when it comes to in-store retail, there are two factors that have a significant impact on the climate footprint of shopping: the store's energy consumption and the customer's journey to the store. "Electronics stores, for example, have higher energy consumption than eyeglass stores," explains Ulrich Gromke of the German Federal Environment Agency (UBA). Department stores and stores consume vast amounts of energy that are eliminated in online retailing.

The "last mile" matters

An important factor in the calculation is also the so-called "last mile", i.e. the route from the store (or from the destination parcel center in online retailing) to the customer. According to the Federal Environment Agency, a ...

- ... shopping trip by bicycle/walking: 0 grams of CO_2 equivalents.
- ... shopping trip by subway/bus (5 kilometers): 290 - 400 grams of CO_2 equivalents.
- ... shopping trip by car (5 kilometers): 600 - 1100 grams of CO_2 equivalents.
- ... delivery by online service: 200 - 400 grams of CO_2 equivalents.

Due to good vehicle utilization, efficient delivery times and an increasing use of electric vehicles, online services perform significantly better than cars. Bicycle couriers could make the "last mile" for online orders even more climate-friendly. Important: The emissions of the "last mile" do not cover the entire delivery route. This can be significantly longer - for example, if the product is flown in from overseas and sent back again and again.

Nevertheless, the studies assessed by the Federal Environment Agency conclude that in most cases online shopping causes fewer CO_2 equivalents than shopping in stores. This is mainly due to more efficient "last mile" delivery and energy-saving storage.


olegkov

Packaging waste increases due to online shopping

But the CO_2 balance is not everything, of course. Almost 1.5 million tons of packaging material were consumed by parcel shipments in 2015, as a study by the Association for Packaging Market Research mba (APMR) shows. Since online business has been growing so rapidly, retailers are packaging their products differently. "The packaging is generally thicker so that the goods don't break during transport," explains Gromke. He says this applies equally to products in retail stores and online stores. A trend at the expense of the environment that has only come about through delivery services.

However, you can't talk about quantities of waste here, says Kurt Schüler, managing director of APMR: "According to the definition, waste is only that which can no longer be used in the end. Parcel packaging, however, is almost completely recycled." Nevertheless, without mail orders, we could save tons of cardboard boxes - and thus also raw materials and energy consumed during production and recycling.

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Many unnecessary emissions

Online retail packaging generates additional emissions, ranging from 20 grams of CO_2 equivalents (for a small folding box with a volume of 2.4 liters) to 1000 grams (for a large cardboard box with a volume of 128 liters), depending on the size and material. "Any packaging that is not produced saves the environment", says Ulrich Gromke.

According to the Federal Environment Agency, the amount of packaging could be reduced by 22 to 24 percent, for example by shipping products in their original packaging or by using reusable packaging that customers return empty. The calculated savings potential is between 180.000 and 370.000 tons per year.

Returns end up in garbage bins

In addition, some returned products cannot be sold as new because they show too many signs of use or are even damaged. This problem was exacerbated during the COVID-19 pandemic. A research group on returns management at the University of Bamberg, Germany surveyed more than 100 e-commerce retailers about their experiences during the first six months of the pandemic. They tended to report that ...

- ... more customers were returning goods at the end of the granted return period.
- ... a greater proportion of returns showed obvious signs of use.
- ... a larger proportion of returns can only be disposed of due to their condition.

The discussion about whether it's better to shop online or in a store includes more aspects than the environmental impact. Other factors play a role - for example, working conditions in the mail order business or the demise of stores in city centers.

Think first, then order

In terms of pure climate friendliness, online shopping can actually be better than a shopping trip to the city in many cases. Depending on the product, however, the climate footprint varies because many factors such as package size, delivery routes, packaging, returns or energy consumption in the store are factored into the equation.

Anyone who wants to shop in an environmentally friendly way should do it more consciously. "The bottom line is that it's all about shopping behavior. The less I buy or order, the better it is for the environment," says Gromke.

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The most important factor is production

However, depending on the product, trade and transport only matter for one to ten percent of total emissions. In the life cycle of a product, up to three quarters of greenhouse gas emissions occur in manufacturing. "Whether we shop online or in stores is not that decisive for our climate footprint," balances Dirk Messner, President of the Federal Environment Agency. "The biggest adjusting screw for ecological shopping is durable products that are manufactured in an environmentally friendly way."

Our conclusion: online shopping is more convenient and not necessarily worse for the environment. If you want to make your shopping habits more environmentally and climate friendly, there are a few things you can keep in mind.

https://www.quarks.de/umwelt/online-shopping-klimafreundlicher-als-einkauf-im-geschaeft/

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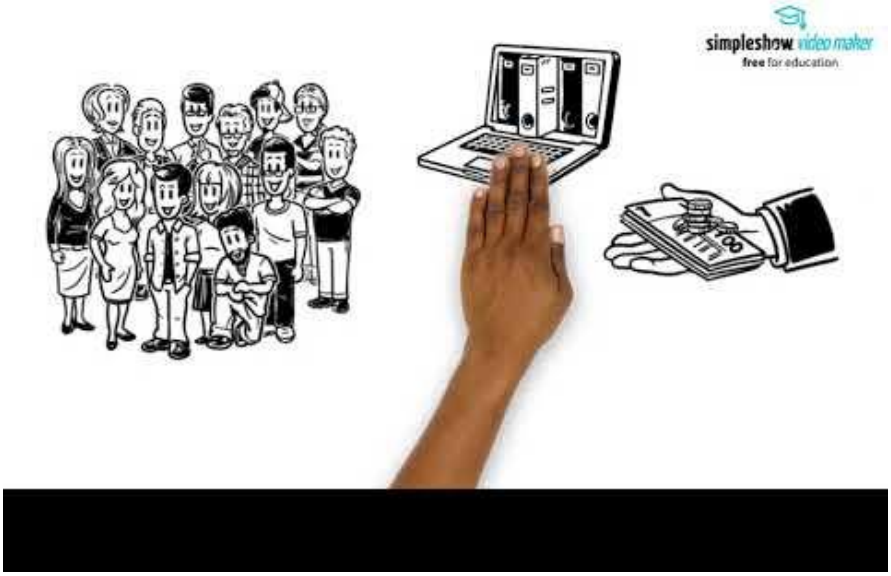
3 Tips for sustainable e-commerce



Task

2. Use this article and video to write an informational text for the customers of *Weltladen*, which can be published on the homepage and informs the customers about the impact of online shopping on the environment and encourages them to shop consciously online.
3. Develop a guideline for staff regarding a sustainable online store.

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Possible solutions

1. Based on the statistics, assess whether the Weltladen should set up an online store.

According to statistics, e-commerce sales in Europe will increase steadily over the next few years. Currently, the turnover is around 500 billion USD and is expected to increase to 569 billion USD by 2025. In order to participate in this positive development and not to be left behind by the competitors, it would be advisable to set up an online store. In this way, the world store would be protected against sales losses even in the event of future pandemics and could pursue its charitable activities unhindered.

2. Use this article and video to write an informational text for the customers of *Weltladen*, which is published on the homepage and informs the customers about the impact of online shopping on the environment and encourages them to shop consciously online.

Arguments that students can use to illustrate the impact of online shopping on the environment:

- Online shopping generates significantly more effort in retail: the storage, the many additional delivery routes, the large amount of packaging and waste.
- at least every second package of purchased clothing is returned, generating per day emissions of about 400 tons of CO_2
- The carbon footprint of online shopping is made up of:
    - Electricity of the device (cell phone, computer): 5 - 60 grams of CO_2 equivalents
    - Energy consumption of the warehouses: 20 - 120 grams of CO_2 equivalents
    - Delivery route from the parcel center to the customer: 200 - 400 grams of CO_2 equivalents
    - Packaging: 20 - 1000 grams of CO_2 equivalents
- An important factor in the calculation is also the so-called "last mile": delivery by online service generates 200 - 400 grams of CO_2 equivalents.
- Almost 1.5 million tons of packaging material were consumed by parcel shipments in 2015
- Online retail packaging generates additional emissions, ranging from 20 grams of CO_2 equivalents (for a small folding box with a volume of 2.4 liters) to 1000 grams (for a large cardboard box with a volume of 128 liters), depending on the size and material.
- Anyone who wants to shop in an environmentally friendly way should do it more consciously. "The bottom line is that it's all about shopping behavior. The less I buy or order, the better it is for the environment"

3. Develop a guideline for staff regarding a sustainable online store.

    1. check packaging sizes (one package solution)
    2. offer CO2 compensation
    3. recycle packaging (use old packages - work with secretary and janitorial team)
    4. make returns paperless
    5. delivery to packing stations to avoid a large number of delivery attempts
    6. educate customers about the environmental impact of online shopping
    7. do not destroy returns