

# CIRCLE

—MANUAL

CIRCULAR ECONOMY IN GRAPHIC DESIGN



# SUSTAINABLE GRAPHIC DESIGN

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# CONTENTS

<b>GLOSSARY .....</b>	<b>4</b>
<b>INTRODUCTION.....</b>	<b>5</b>
<b>CHAPTER I</b>	
<b>Electronic consumption and the impact that designs have online .....</b>	<b>6</b>
1.1. Introduction and Regulations .....	7
1.2. Tips and Types for Graphic Design Teachers.....	9
<b>CHAPTER II</b>	
<b>Use energy-efficient equipment .....</b>	<b>10</b>
2.1. Importance and Regulations .....	11
2.2. Energy-efficient Equipment .....	13
2.3. Tips and Types for Graphic Design Teachers.....	14
<b>CHAPTER III</b>	
<b>Digital Tools .....</b>	<b>15</b>
3.1. History.....	16
3.2. Cad and Graphic Design Software .....	17
3.3. Tips and Types for Graphic Design Teachers.....	19
<b>CHAPTER IV</b>	
<b>Eco-friendly materials .....</b>	<b>21</b>
4.1. History .....	22
4.2. Recycled Paper .....	23
4.3. Biodegradable Plastics.....	27
4.4. Natural Fibers .....	29
4.5. Tips and Types for Graphic Design Teachers.....	30
<b>CHAPTER V</b>	
<b>Reusing Materials .....</b>	<b>31</b>
5.1. Importance.....	32
5.2. Recycling Programmes .....	34
5.3. Tips and Types for Graphic Design Teachers.....	36
<b>CHAPTER VI</b>	
<b>Minimizing Packaging .....</b>	<b>37</b>
6.1. Why and How .....	38
6.2. Tips and Types for Graphic Design Teachers.....	39



<b>CHAPTER VII</b>	
<b>Choosing sustainable printing techniques.....</b>	<b>40</b>
7.1. Why.....	41
7.2. Digital Printing .....	42
7.3. Led Printing.....	43
7.4. Printing without Water .....	44
7.5. Tips and Types for Graphic Design Teachers.....	45
<b>CHAPTER VIII</b>	
<b>Using virtual meeting and presentations .....</b>	<b>46</b>
8.1. Why and How.....	47
8.2. Tips and Types for Graphic Design Teachers .....	49
<b>CHAPTER IX</b>	
<b>Optimizing the design process .....</b>	<b>50</b>
9.1. Why .....	51
9.2. How .....	52
9.3. Tips and Types for Graphic Design Teachers .....	54
<b>CHAPTER X</b>	
<b>Inks and solvents.....</b>	<b>55</b>
10.1. Types.....	56
10.2. Application.....	57
10.3. Tips and Types for Graphic Design Teachers.....	58
<b>CHAPTER XI</b>	
<b>Print on demand .....</b>	<b>59</b>
11.1. Why .....	60
11.2. Tips and Types for Graphic Design Teachers.....	62
<b>CHAPTER XII</b>	
<b>How to select the most sustainable printing company .....</b>	<b>63</b>
12.1. Certifications and Methodology.....	64
12.2. Tips and Types for Graphic Design Teachers.....	66
<b>CHAPTER XIII</b>	
<b>Communication and spreading the knowledge of how to approach sustainable graphic design to others .....</b>	<b>67</b>
13.1. Importance.....	68
13.2. Tips and types for graphic design teachers .....	69
<b>CHAPTER XIV</b>	
<b>Conclusion.....</b>	<b>70</b>



# GLOSSARY

This glossary is intended to provide a clear understanding of the key terms used in the manual, helping graphic designers and graphic design teachers to adopt sustainable practices in their work and teaching.

TERM:	DESCRIPTION:
1_ SUSTAINABLE GRAPHIC DESIGN	▶ A design approach that minimizes the negative impact on the environment and maximizes the use of resources.
2_ ECO-FRIENDLY PRINTING	▶ Printing techniques that use environmentally friendly inks and solvents and reduce waste.
3_ VIRTUAL MEETING AND PRESENTATIONS	▶ The use of technology to conduct meetings and presentations online, reducing the need for travel and minimizing the carbon footprint.
4_ REUSING MATERIALS	▶ The practice of using materials multiple times before discarding them, reducing waste and conserving resources.
5_ MINIMIZING PACKAGING	▶ The practice of reducing the amount of packaging material used, reducing waste and conserving resources.
6_ CHOOSING SUSTAINABLE PRINTING TECHNIQUES	▶ The selection of printing techniques that minimize environmental impact and conserve resources.
7_ OPTIMIZING THE DESIGN PROCESS	▶ The practice of improving the design process to reduce waste and minimize environmental impact.
8_ ENERGY-EFFICIENT EQUIPMENT	▶ The use of equipment that is designed to conserve energy and minimize waste.
9_ DIGITAL TOOLS	▶ The use of technology to create and manage designs, reducing the need for paper and other materials.
10_ ECO-DESIGN FOR COMMUNICATION PROJECT	▶ A European Union-funded project aimed at promoting sustainable graphic design and eco-friendly printing practices.
11_ ELECTRONIC CONSUMPTION	The use of technology and digital devices to create, manage, and distribute designs, reducing the need for paper and other materials.



# INTRODUCTION

## CIRCLE

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Graphic design plays a crucial role in shaping our visual culture, and as such, it is important that the industry is mindful of its impact on the environment.

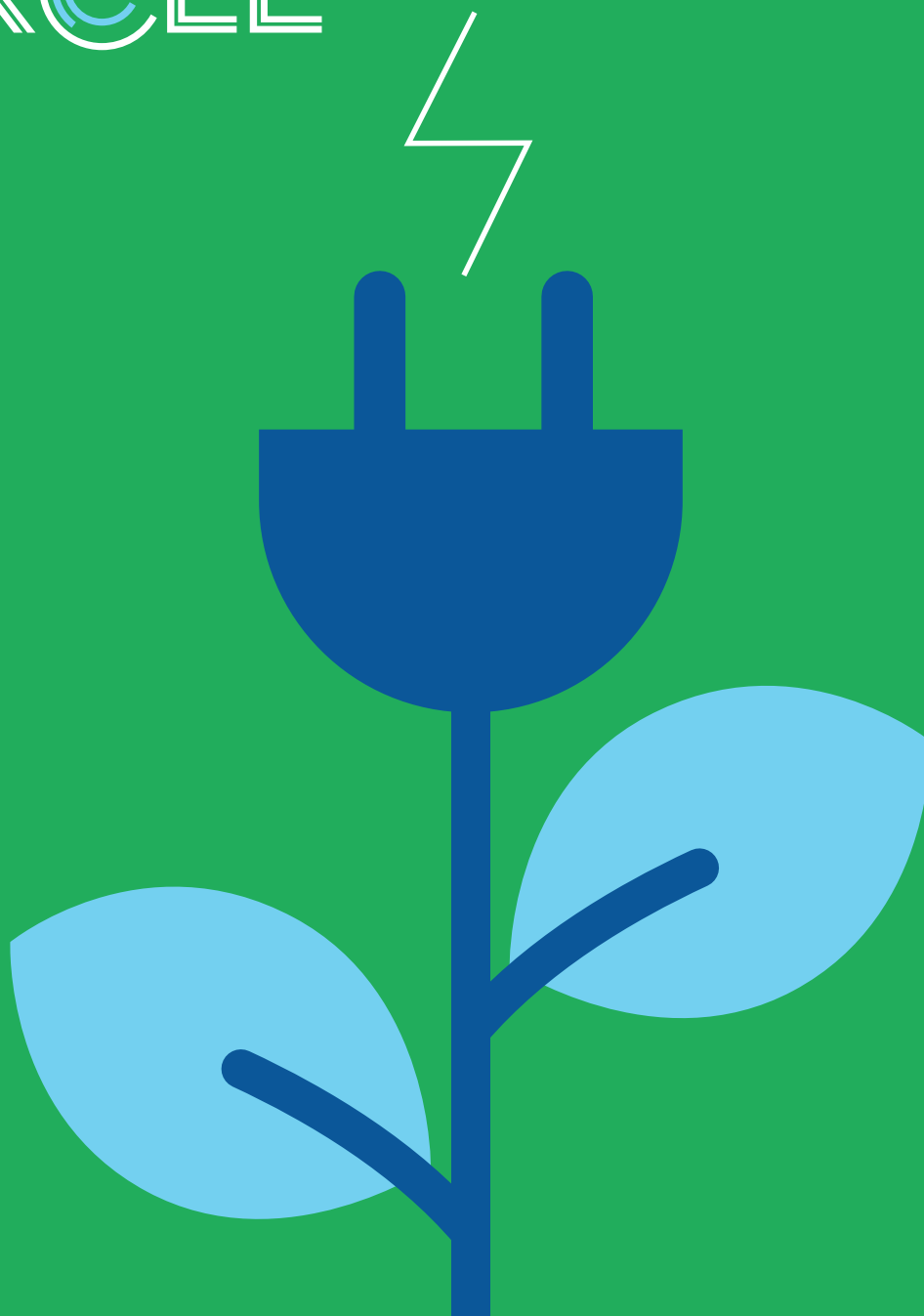
This manual is one of the main results of the Circle project, an Erasmus+ small-scale project managed by SIIPS 4 - SINDICATUL INDEPENDENT DIN INVATAMANTUL PREUNIVERSITAR SECTOR 4 (Romania) and UN-LAB S.N.C. (Italy), which focuses on promoting circular economy in graphic design. The Circle project aims to promote the adoption of circular economy principles in the graphic design industry, with a focus on reducing waste, increasing resource efficiency, and creating more sustainable business practices.

In this manual, we will cover various topics related to sustainable graphic design, including the use of eco-friendly materials, energy-efficient equipment, and sustainable printing techniques. We will also discuss the role of graphic designers in promoting sustainability and the importance of graphic design teachers in introducing sustainable practices in the curriculum. The manual will provide tips and guidance on how to optimize the design process to minimize waste and reduce the impact of graphic design on the environment.

This manual is aligned with the objectives of the European Green Deal and the EU's Circular Economy Action Plan. The European Green Deal aims to transform the EU into a fair and sustainable society, where economic growth is decoupled from resource use. The EU's Circular Economy Action Plan, on the other hand, aims to promote a circular economy in which waste is reduced, resources are kept in use for as long as possible, and the environmental impact of production and consumption is minimised.

We hope that this manual will serve as a valuable resource for graphic designers and graphic design teachers, and encourage them to adopt sustainable practices in their work.

By working together, we can help build a more sustainable future for the graphic design industry and contribute to a more sustainable world for us all.



## CHAPTER I

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### **ELECTRONIC CONSUMPTION AND THE IMPACT THAT DESIGNS HAVE ONLINE**

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#### **1.1.**

Introduction and Regulations

#### **1.2.**

Tips and Types  
for Graphic Design Teachers



Due to Eurostat in 2020, 10.3 kg of electrical and electronic equipment waste were collected per inhabitant in the EU.

Graphic designers can contribute to reducing energy consumption and electronic equipment waste in several ways.

## 1.1 CHAPTER I INTRODUCTION AND REGULATIONS

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Electronic consumption and the impact that designs have online can contribute to the environmental impact of graphic design. The [digitalization of the economy](#) and the increase of the use of electronic devices such as smartphones, laptops, and servers, are leading to an increase in energy consumption and electronic waste.

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### SOME EXAMPLES INCLUDE:

- **[MINIMIZING THE USE OF ELECTRONIC DEVICES](#)**  
by using digital tools such as CAD and graphic design software, designers can reduce the need to print designs and reduce the use of electronic devices.
- **[MAXIMIZING THE LIFESPAN OF EQUIPMENT](#)**  
by proper maintenance and upgrading when necessary, rather than replacing it with new equipment.
- **[USING DIGITAL TOOLS THAT ARE ENERGY-EFFICIENT](#)**  
by using digital tools that are energy-efficient and have a lower environmental impact, designers can reduce their electronic consumption.
- **[POWERING OFF EQUIPMENT WHEN NOT IN USE](#)**  
and using power management settings to reduce energy consumption.
- **[RECYCLING OR PROPERLY DISPOSING OF ELECTRONIC EQUIPMENT](#)**  
at the end of its life.
- **[SUPPORTING INITIATIVES AND REGULATIONS](#)**  
that promote the reduction of electronic waste
- **[ENCOURAGING THE USE OF SUSTAINABLE MATERIALS](#)**  
by encouraging the use of sustainable materials, designers can reduce the environmental impact of electronic consumption.

It is also important to be aware of the environmental impact of the devices and equipments used and to choose products that have been sustainably produced, in terms of energy and resources used in their production and disposal.



The European Union has several regulations that address the environmental impact of electronic consumption.

## 1.1 CHAPTER I INTRODUCTION AND REGULATIONS

### SOME EXAMPLES INCLUDE:

- **THE EU'S ENERGY EFFICIENCY DIRECTIVE<sup>1</sup>**  
which requires member states to set targets for energy efficiency and to promote the use of digital tools in design, as they can significantly reduce energy consumption.
- **THE EU'S CIRCULAR ECONOMY ACTION PLAN<sup>2</sup>**  
which aims to promote the use of digital tools in design, as they can significantly reduce the environmental impact of design by reducing the need for physical materials and minimizing waste.
- **THE EU'S E-WASTE DIRECTIVE<sup>3</sup>**  
which addresses the environmental impact of electronic waste by promoting the collection, treatment, and recovery of waste electrical and electronic equipment (WEEE).

In the following chapters of the Manual, we will explore all of these topics in more detail.

### NOTE

1— [https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive\\_en](https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en)

2— [https://environment.ec.europa.eu/strategy/circular-economy-action-plan\\_en](https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en)

3— [https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee_en)





## 1.2 CHAPTER I

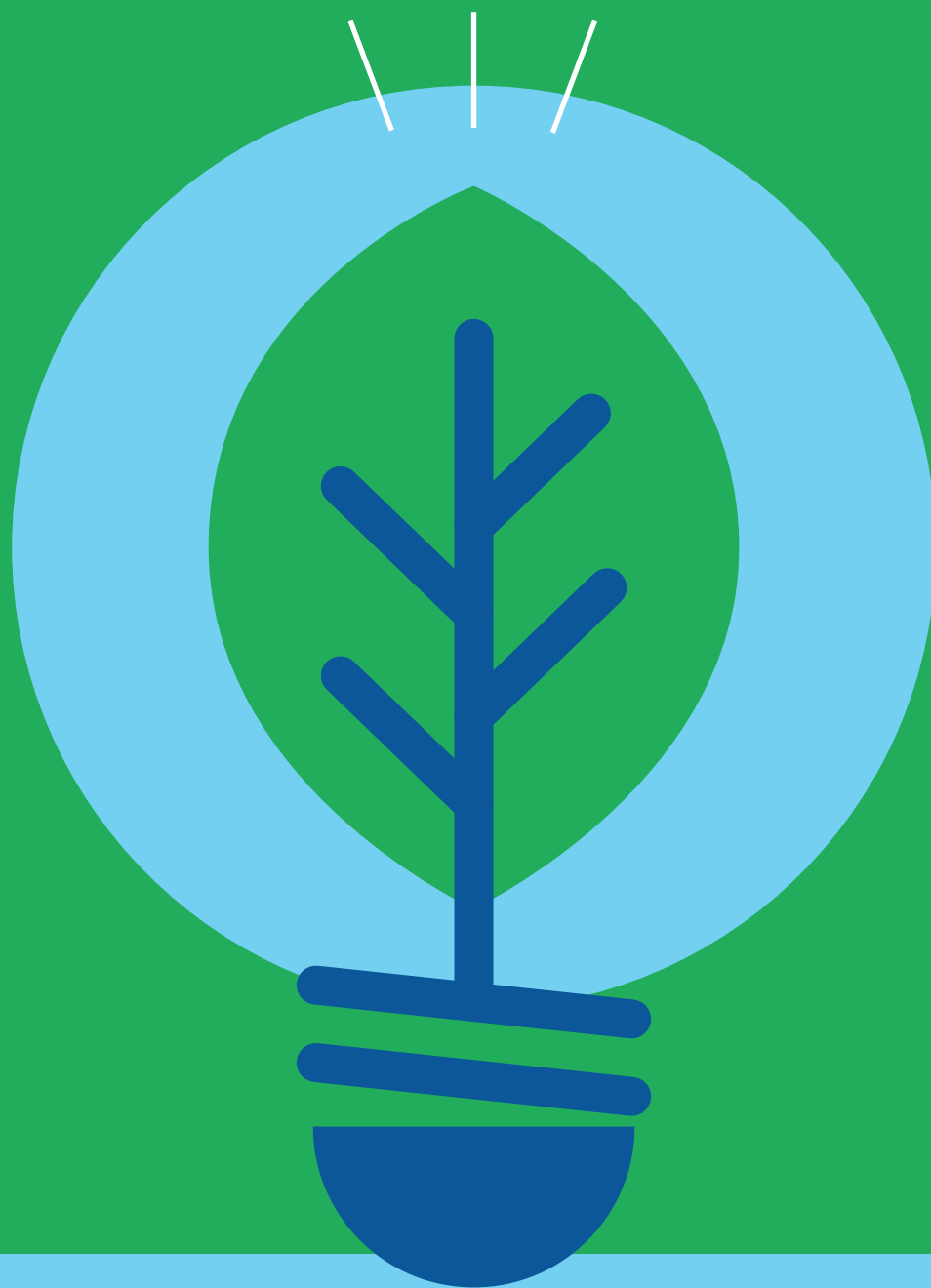
# TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Graphic design teachers can introduce the [topic of electronic consumption and the impact that designs have online](#) in the curriculum in a number of ways

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- **[DISCUSS THE CONCEPT OF DIGITAL SUSTAINABILITY](#)**  
Explain to students the importance of reducing the carbon footprint of digital design and the role of sustainable design practices in reducing the impact of digital communication on the environment.
- **[EXPLORE THE IMPACT OF DESIGN ON THE ENVIRONMENT](#)**  
Teach students how design decisions can impact energy consumption and greenhouse gas emissions associated with digital devices and data centers.
- **[ENCOURAGE ENERGY-EFFICIENT DESIGN PRACTICES](#)**  
Teach students about tools and techniques for designing for low energy consumption, such as optimizing images and videos for low-bandwidth use, and reducing file sizes.
- **[PROMOTE SUSTAINABLE DIGITAL DESIGN STRATEGIES](#)**  
Introduce students to strategies for reducing the environmental impact of digital design, such as using sustainable hosting services, adopting green power sources, and minimizing the use of disposable devices.
- **[EXPLORE ALTERNATIVE DESIGN TECHNOLOGIES](#)**  
Teach students about alternative technologies and processes for designing and producing digital media, such as virtual and augmented reality, 3D printing, and other environmentally friendly design methods.
- **[ASSIGN PROJECTS THAT ENCOURAGE SUSTAINABLE DIGITAL DESIGN PRACTICES](#)**  
Assign projects that challenge students to consider the impact of their design choices on the environment, and encourage them to develop creative solutions for reducing the carbon footprint of digital design.



## CHAPTER III

### USE ENERGY-EFFICIENT EQUIPMENT

#### 2.1.

Importance and Regulations

#### 2.2.

Energy-efficient Equipment

#### 2.3.

Tips and Types  
for Graphic Design Teachers



## 2.1 CHAPTER II IMPORTANCE AND REGULATIONS

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Graphic design requires the use of equipment such as computers, printers, and lighting. The European Green Deal aims to achieve a climate-neutral economy by 2050, and one of the key ways to achieve this is by increasing energy efficiency and reducing energy consumption.

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### Using energy-efficient equipment in graphic design is an important step in reducing energy consumption and carbon emissions.

By using energy-efficient equipment, graphic designers can reduce their environmental impact and contribute to the European Green Deal's goal of reducing greenhouse gas emissions.

#### THIS CAN BE ACHIEVED BY:

- **USING LED LIGHTS**  
which can reduce energy consumption by up to 80% compared to traditional incandescent lights
- **USING ENERGY-EFFICIENT SETTINGS**  
By using energy-efficient settings on computers, printers and lighting, designers can reduce their energy consumption.
- **USING NATURAL LIGHT**  
By using natural light instead of artificial light, designers can reduce their energy consumption.
- **CHOOSING RENEWABLE SOURCE**  
if the energy used to power the equipment comes from a renewable source, the carbon footprint will be much lower than if the energy comes from a fossil fuel source.



The exact energy savings and carbon footprint reduction for a graphic designer using energy-efficient equipment depend on several factors, such as the specific equipment used, the number of hours it is used, and the energy efficiency of the equipment. However, energy-efficient equipment can lead to significant energy savings and carbon footprint reduction.

Additionally, regulations and policies at the EU level, such as the Energy Efficiency Directive and the Ecodesign Directive, set minimum energy performance standards for certain types of equipment to encourage energy efficiency and reduce energy consumption.

#### MORE SPECIFICALLY:

- **THE EU'S ENERGY EFFICIENCY DIRECTIVE<sup>4</sup>**  
requires member states to set targets for energy efficiency and to promote the use of energy-efficient equipment. This includes measures such as minimum energy performance standards (MEPS) for equipment and the use of Energy Star or equivalent labels.



## 2.1 CHAPTER II IMPORTANCE AND REGULATIONS

- **THE EU'S ECODSIGN DIRECTIVE<sup>5</sup>**  
sets minimum environmental performance standards for energy-using products, such as computers and printers. This directive aims to reduce the environmental impact of these products by setting standards for energy efficiency, and by reducing the environmental impact of their use.
- **THE EU'S ENERGY LABELLING DIRECTIVE<sup>6</sup>**  
requires manufacturers to provide information on the energy efficiency of their products. This allows consumers to make more informed choices when purchasing equipment.



### REGULATIONS IN ROMANIA FOR THE USE OF ENERGY EFFICIENT EQUIPMENT

\_\_\_\_\_ In Romania, there are regulations in place to promote the use of energy-efficient equipment in various industries, including the graphic design industry. The National Energy Efficiency Action Plan<sup>7</sup> sets targets for energy efficiency improvements in buildings, industry, and transport, and includes measures to promote the use of energy-efficient equipment, such as through the implementation of minimum energy performance standards and labeling schemes. Additionally, the Government of Romania has implemented a program called “Eco-Efficiency in Industry,” which provides financial support for companies to upgrade their equipment and facilities to improve energy efficiency.

#### NOTE

4— [https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive\\_en](https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en)

5— [https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products\\_en](https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products_en)

6— [https://single-market-economy.ec.europa.eu/single-market/european-standards/harmonised-standards/ecodesign\\_en](https://single-market-economy.ec.europa.eu/single-market/european-standards/harmonised-standards/ecodesign_en)

7— <https://www.anre.ro/ro/eficienta-energetica/rapoarte/rapoarte-de-monitorizare-a-implementarii-planului-national-de-actiune-in-domeniul-eficientei-energetice-pnaee>

8— [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste\\_statistics\\_-\\_electrical\\_and\\_electronic\\_equipment](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics_-_electrical_and_electronic_equipment)

### REGULATIONS IN ITALY FOR THE USE OF ENERGY EFFICIENT EQUIPMENT

\_\_\_\_\_ In Italy, the use of energy-efficient equipment is regulated by the Energy Efficiency Directive (2018/2002/EU)<sup>8</sup> which requires member states to set national energy efficiency targets and implement measures to achieve them. The directive also promotes the use of energy-efficient products and technologies, such as lighting and building systems. The Italian government has also implemented the Energy Efficiency Obligation (EEO) scheme, which requires energy suppliers to implement energy efficiency measures and to promote the use of energy-efficient products and services among their customers. Additionally, the Italian Ministry of Economic Development has developed a system of incentives and subsidies to encourage the use of energy-efficient equipment in different sectors, including the graphic design industry.



## 2.2 CHAPTER II

# ENERGY-EFFICIENT EQUIPMENT

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Energy-efficient equipment refers to devices and machines that are designed to use less energy to perform the same or similar functions as traditional equipment. Many of them now have Energy Star certifications, which means they are designed to use less energy.

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### MORE SPECIFICALLY, ENERGY-EFFICIENT EQUIPMENT IN GRAPHIC DESIGN INCLUDE:

- **ENERGY-EFFICIENT COMPUTERS**  
These can include features such as automatic power-saving modes and low-power processors. Energy Star certified computers can use up to 70% less energy than non-certified computers.
- **ENERGY-EFFICIENT PRINTERS**  
These can include features such as automatic power-saving modes and duplex printing. Energy Star certified printers can use up to 50% less energy than non-certified printers.
- **ENERGY-EFFICIENT MONITORS**  
These can include features such as automatic power-saving modes and low-power backlighting. Energy Star certified monitors can use up to 50% less energy than non-certified monitors.
- **ENERGY-EFFICIENT SERVERS**  
These can include features such as automatic power-saving modes and low-power processors.



## 2.3 CHAPTER II TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

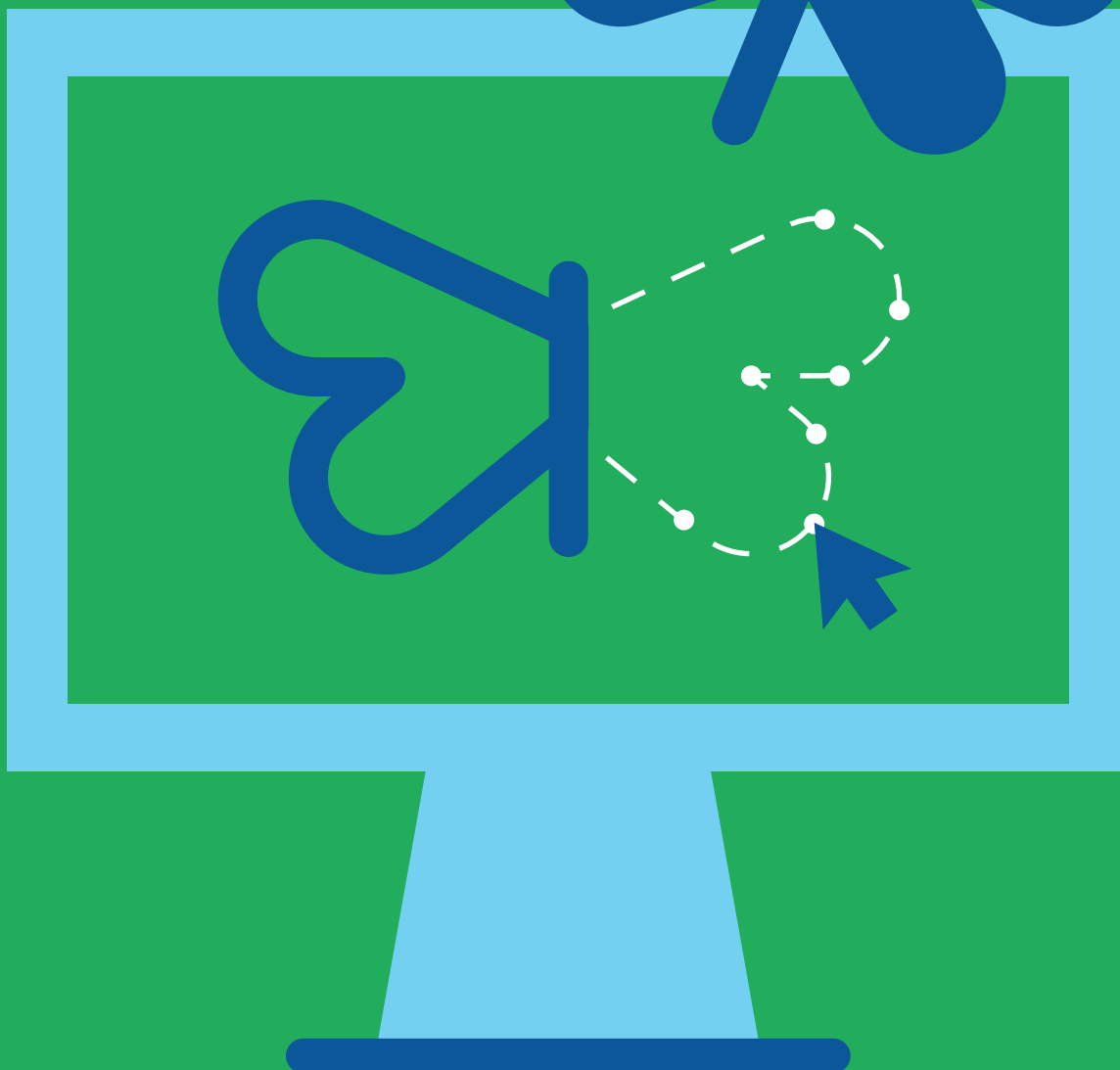
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Here are some tips and types for graphic design teachers on [how to introduce the use of energy-efficient equipment in the curriculum](#):

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- **HANDS-ON WORKSHOPS**  
Offer students hands-on workshops to use energy-efficient equipment. This can include using laptops, monitors, and other devices that are Energy Star certified.
- **CASE STUDIES**  
Provide students with case studies of companies that have switched to energy-efficient equipment and discuss the benefits they experienced such as cost savings, improved work environment and increased productivity.
- **GROUP PROJECTS**  
Assign group projects that require students to research and present on energy-efficient equipment. This can include comparing the energy consumption and costs of different devices, identifying the best practices for using energy-efficient equipment and creating presentations on the benefits of using energy-efficient equipment.
- **GUEST SPEAKERS**  
Invite industry experts to come and speak about their experiences with energy-efficient equipment. This can provide students with real-life examples of how energy-efficient equipment is used in the field and the benefits it provides.
- **INTEGRATE INTO EXISTING LESSONS**  
Incorporate energy-efficient equipment into existing lessons on design and technology. This can include discussing energy-efficient equipment as part of a lesson on computer hardware or as part of a lesson on sustainability in design.

By incorporating these tips into the curriculum, graphic design teachers can help students understand the importance of using energy-efficient equipment and how it can benefit the environment, their work and their careers.



## CHAPTER III

### DIGITAL TOOLS

#### 3.1.

History

#### 3.2.

Cad and Graphic Design Software

#### 3.3.

Tips and Types for Graphic Design Teachers



### 3.1 CHAPTER III HISTORY

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Digital tools such as computer-aided design (CAD) and graphic design software can significantly reduce the environmental impact of design by reducing the need for physical materials and minimizing waste.

These tools allow designers to create, edit and share designs digitally, without the need for paper, ink and other materials.

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## In Europe, the use of digital tools for design has been increasingly adopted in recent years.

In particular, the use of [CAD](#) and [graphic design software](#) has become more widespread as these tools have become more accessible and user-friendly. They are being used in various sectors including graphic design, architecture, and product design.

The evolution of Computer-Aided Design (CAD) software in Europe has followed a path similar to the development of CAD technology in other regions of the world.

CAD software has been used in Europe since the 1960s, when the first computer-aided design systems were developed for mechanical and electrical engineering applications. Over the next several decades, the technology evolved to include more advanced features, greater compatibility with other software programs, and increased ease of use.

In the 1980s and 1990s, the popularity of CAD software continued to grow in Europe, and new software programs were developed specifically for architecture, engineering, and construction (AEC) applications. During this time, the first true 3D CAD software was introduced, allowing for even greater flexibility and precision in design. The early 2000s saw the emergence of new, more affordable CAD software, making it accessible to a wider range of users.

In recent years, the evolution of CAD software in Europe has continued, with the development of cloud-based CAD systems and mobile CAD apps, among other innovations. Many CAD software programs now offer powerful collaboration features, allowing multiple users to work on the same design simultaneously. Additionally, the use of artificial intelligence and machine learning has allowed for the development of intelligent CAD software that can learn from user behavior and adapt to meet their needs.



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Overall, the evolution of CAD software in Europe has been characterized by a continual quest for [greater efficiency](#), flexibility, and ease of use, making it easier for designers, engineers, and other professionals to create [high-quality designs](#).

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## 3.2 CHAPTER III

# CAD AND GRAPHIC DESIGN SOFTWARE

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There are many CAD and graphic design software that have been developed to be more energy-efficient and have a lower environmental impact.

The most popular include [Adobe Creative Suite](#) (Photoshop, Illustrator, InDesign), [CorelDRAW](#), [Sketch](#), [Affinity Designer](#), and [Canva](#).

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These software programs are used by professionals and students in the graphic design field, and they offer a range of features and tools to help designers create high-quality, visually appealing designs and the following are some of the main characteristics:

## Adobe Creative Suite<sup>9</sup>

- Non-destructive editing, allowing designers to make changes to their designs without permanently altering the original image or design.
- Advanced colour management tools, such as colour swatches and colour harmonies, to ensure consistent colour across designs.
- Customizable brushes and vector tools, which can be used to create unique graphics and shapes.
- Layer masks, which allow designers to apply changes to specific areas of their designs without affecting other parts of the design.
- Integration with other Adobe software, such as Adobe Lightroom and Photoshop, to streamline the design process.

## CorelDRAW<sup>10</sup>

- Vector illustration tools, such as the pen tool and Bezier curves, to create precise graphics and shapes.
- Advanced typography tools, including font management and multi-language support, to create professional-looking text.
- Bitmap-to-vector tracing, which allows designers to turn pixel-based images into vector graphics.
- Customizable workspace, which can be tailored to each designer's preferences and work style.

## Sketch<sup>11</sup>

- Vector-based design tools, allowing designers to create scalable graphics and designs.
- Collaboration tools, such as shared libraries and team design, to allow multiple designers to work on a project simultaneously.
- Automated design tools, such as symbols and styles, to streamline the design process.
- Integration with other design tools and plugins, such as Sketch Cloud, to extend its functionality.



## 3.2 CHAPTER III CAD AND GRAPHIC DESIGN SOFTWARE

### Affinity Designer<sup>12</sup>

- Vector-based design tools, including the pen tool and bezier curves, to create precise graphics and shapes.
- Advanced typography tools, such as kerning and ligatures, to create professional-looking text.
- Bitmap-to-vector tracing, which allows designers to turn pixel-based images into vector graphics.
- Customizable workspace, which can be tailored to each designer's preferences and work style.

### Canva<sup>13</sup>

- Easy-to-use drag-and-drop interface, making it accessible for users with limited design experience.
- Templates, which can be used as a starting point for designs or to create new designs quickly.
- A range of design elements, including images, illustrations, and text, which can be easily added to designs.
- Built-in design tools, such as color palettes, font combinations, and grids, to ensure consistency and improve the overall look and feel of designs.

#### NOTE

9— <https://www.adobe.com/>

10— [www.coreldraw.com](http://www.coreldraw.com)

11— <https://www.sketch.com/>

12— <https://affinity.serif.com>

13— <https://www.canva.com/>



### 3.3 CHAPTER III

## TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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The use of these [graphic design software programs in the school sector](#) may vary depending on the specific needs and requirements of the educational institution.

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Furthermore, the specific software used in schools depends on factors such as budget, student skill level, and the type of projects being undertaken. However, programs like Adobe Creative Suite and Canva are commonly used due to their accessibility, affordability, and user-friendly features.

Adobe Creative Suite, for example, is a widely used graphic design software programme in schools due to its comprehensive set of tools and features for graphic design and digital media creation. Adobe Photoshop is especially popular for photo editing and manipulation, while Adobe Illustrator is commonly used for vector graphics and logo design. CorelDRAW, Sketch, and Affinity Designer are also used in some schools, but they may not be as widely adopted as Adobe Creative Suite due to their cost and more advanced features.

Canva is a relatively new and affordable graphic design software that has gained popularity in schools due to its user-friendly interface and drag-and-drop design features. It is well-suited for students who are new to graphic design and want to create visually appealing designs without a steep learning curve.

### HERE ARE SOME TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS ON

### how to introduce digital tools in the curriculum:

- **HANDS-ON LESSONS**  
Teach students the basics of using graphic design software through hands-on lessons that allow them to experiment and practice on their own.
- **PROJECT-BASED LEARNING**  
Assign projects that require students to use specific digital tools, giving them the opportunity to explore and master these tools while working on real-world design projects.
- **GUEST SPEAKERS**  
Invite industry professionals who use digital tools in their day-to-day work to come and speak to students about their experience and the benefits of these tools.
- **ONLINE RESOURCES**  
Encourage students to explore online resources such as tutorials, forums, and design blogs to learn about new digital tools and techniques.
- **GROUP DISCUSSIONS**  
Lead group discussions about digital tools and their role in graphic design, encouraging students to share their experiences and insights.
- **FIELD TRIPS**  
Organize field trips to design studios, printing shops, and other creative organizations that use digital tools to help students understand the practical applications of these tools in the real world.

**3.3** CHAPTER III**TIPS AND TYPES  
FOR GRAPHIC  
DESIGN TEACHERS****ROMANIA  
THE USE OF COMPUTER-AIDED  
DESIGN (CAD) SOFTWARE  
IN SCHOOLS**

\_\_\_\_\_ The use of CAD software in schools is becoming more common as technology and digital tools become more integrated into education curriculums. It is important for schools to provide students with access to the latest technology and software to prepare them for careers in fields such as graphic design and architecture. Some schools in Romania also offer specialized courses or programmes in areas such as CAD and 3D modeling to provide students with advanced skills in these areas.

**ITALY  
THE USE OF COMPUTER-AIDED  
DESIGN (CAD) SOFTWARE  
IN SCHOOLS**

\_\_\_\_\_ The use of Computer-Aided Design (CAD) software in schools in Italy varies depending on the institution and the specific programme or curriculum. Many technical and vocational schools, as well as universities, offer courses and programs that include CAD software training. Some institutions have dedicated labs or facilities with specialized equipment and software for students to use. The use of CAD software in schools in Italy has been increasing in recent years as the demand for digital skills has grown in many industries. This has allowed schools to provide students with the skills they need to enter the workforce with a competitive edge. However, the use of CAD in schools in Italy is not universal and not all schools have the resources to provide training on this technology.



## CHAPTER IV

### ECO-FRIENDLY MATERIALS

**4.1.**  
History

**4.2.**  
Recycled Paper

**4.3.**  
Biodegradable Plastics

**4.4.**  
Natural Fibers

**4.5.**  
Tips and Types for Graphic Design Teachers



## 4.1 CHAPTER IV HISTORY

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The use of eco-friendly materials in Europe can be traced back to the 1960s and 1970s, when environmental consciousness began to emerge in response to issues such as air and water pollution, deforestation, and resource depletion.

In response to these concerns, alternative materials and processes were developed to reduce the impact on the environment, including recycled materials, biodegradable products, and non-toxic chemicals.

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### In the 1980s, the concept of sustainability and the impact of human activities on the environment gained more attention.

This led to the development of new eco-friendly materials, such as bamboo, cork, and organic cotton, and the introduction of stricter regulations on the use of harmful chemicals and substances in manufacturing.

### In the 1990s and 2000s

as environmental awareness continued to grow, the demand for eco-friendly products increased. This led to the development of new technologies and the introduction of eco-labels and certification programmes to help consumers identify and choose environmentally friendly products.

In recent years, the trend towards sustainability has continued to grow, with more and more businesses and consumers becoming aware of the impact their actions have on the environment. As a result, the market for eco-friendly materials has continued to grow and evolve, with new products and technologies being developed to meet the demands of a more environmentally conscious society.

### Today

eco-friendly materials are widely used in a range of industries, including the building and construction industry, the automotive industry, and the fashion and textiles industry. In the future, it is likely that the trend towards sustainability will continue to drive innovation and the development of new eco-friendly materials and technologies.

To what regards the graphic design industry, when choosing materials for your designs, opt for eco-friendly options. Eco-friendly materials in graphic design can include a variety of options such as recycled paper, biodegradable plastics, and natural fibers. These materials have a lower environmental impact compared to traditional materials, and using them can contribute to a more sustainable future.



## 4.2 CHAPTER IV RECYCLED PAPER

Paper is a fundamental material in graphic design, and its production has a significant impact on the environment.

However, there are many eco-friendly paper options available for designers to choose from, which can reduce the environmental impact of paper production. In this section, we will discuss

### the different types of eco-friendly paper available and the benefits of using them in graphic design.

Recycled paper or ecologically sustainable paper can be produced from a variety of materials, including:

- **POST-CONSUMER WASTE**  
This includes paper products that have been used by consumers and are then collected and processed for reuse.
- **PRE-CONSUMER WASTE**  
This includes paper products that were not used for their intended purpose, such as trimmings from manufacturing processes or unused paper products.
- **AGRICULTURAL WASTE**  
This includes crop residues, straw, and other plant materials that can be processed into paper products.
- **BAMBOO**  
Bamboo is a fast-growing and sustainable resource that can be used to make paper products.
- **HEMP**  
Hemp is a versatile and sustainable plant that can be used to make paper products.



These materials can be processed into various types of paper, including writing paper, printer paper, tissue paper, and packaging paper, among others. The use of these materials helps reduce the need for virgin fibers and minimizes the impact on the environment.

As mentioned above, recycled paper is made from post-consumer waste and is an important component of the **circular economy**, as it helps to conserve natural resources, reduce carbon footprint and waste, and promotes sustainable management of forests in the EU and worldwide. According to Eurostat, the use of recycled paper in Europe has been increasing over the past few decades.

**In 2019, the total production of recycled paper in the European Union (EU) reached 23.3 million tonnes, which represented a significant increase from 17.2 million tonnes in 2009.**

This growth can be attributed to the increasing focus on sustainable development and environmental protection, as well as the growing demand for recycled paper products.



## HERE ARE SOME DATA POINTS RELATED TO the use of recycled paper in the European Union:

### 4.2 CHAPTER IV RECYCLED PAPER

#### 76.1% RESOURCE CONSERVATION

According to Eurostat<sup>14</sup>, in 2019, the European Union recycled 76.1% of its paper waste, saving 17.5 million metric tons of raw materials. This helps to conserve natural resources by reducing the need to harvest new trees.

#### 70% CARBON FOOTPRINT REDUCTION

According to the European Recycling Industries Confederation<sup>15</sup>, paper recycling saves up to 70% of the energy needed to produce paper from virgin fibers.

#### Ø WATER CONSERVATION

According to the European Recycling Industries Confederation, recycling paper uses less water than producing paper from virgin fibers.

#### 17.5 TREES CONSERVATION

MIL. According to the Confederation of European Paper Industries (CEPI), recycling one ton of paper saves around 17 trees. In 2019, the European Union recycled 76.1% of its paper waste, saving 17.5 million metric tons of raw materials.

It's important to note that these data points are approximate and may vary depending on the specific recycling methods and paper production processes used. The EU is continuously working on improving paper recycling rates and promoting sustainable paper production.

## The European Union has certifications such as FSC and PEFC that guarantee that the paper is sourced from responsibly managed forests.

In fact, the **FSC (Forest Stewardship Council)** and **PEFC (Programme for the Endorsement of Forest Certification)** are two of the most widely recognized international certification schemes for sustainable forest management.

#### NOTE

14— <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211027-2>

15— <https://www.euric-aisbl.eu/branches/erpa>







## 4.2 CHAPTER IV RECYCLED PAPER

### MORE SPECIFICALLY:

- **FSC-CERTIFIED PAPER**  
FSC (Forest Stewardship Council) certified paper is made from responsibly managed forests. The FSC certification is based on 10 principles that address issues such as the rights of indigenous people, conservation of biodiversity, and the protection of forests. FSC-certified products are verified through a rigorous third-party auditing process to ensure that they meet the standards set by the organization. Additionally, FSC-certified paper is often more affordable than traditional options.
- **PEFC-CERTIFICATED PAPER**  
The PEFC certification is based on a similar set of principles, but with a greater focus on the sustainable management of forests, including the protection of water resources, soil, and wildlife habitats. PEFC-certified products are also subject to regular auditing to ensure that they continue to meet the standards set by the organization.

Both of these certifications play an important role in promoting the responsible management of forests, and by extension, promoting the use of eco-friendly and sustainable materials such as recycled paper in Europe.

**When choosing eco-friendly paper options, it is important to consider the entire lifecycle of the paper, from production to disposal.**

Additionally, it's important to check for the certifications, and recycled content, to ensure that the paper is produced sustainably. In fact, it's worth noting that the use of recycled paper can vary depending on the company and the specific product, and not all products labelled as "recycled" are made entirely of recycled paper.

**By choosing eco-friendly paper options, graphic designers can reduce the environmental impact of paper production and contribute to a more sustainable future.**

Additionally, by choosing eco-friendly options, designers can also create designs that are in line with the values of their clients and customers.



## 4.2 CHAPTER IV RECYCLED PAPER

### ROMANIA RECYCLED PAPER IS BECOMING MORE POPULAR AND WIDELY USED IN ROMANIA

Recycled paper is becoming more popular and widely used in Romania, as it is an environmentally-friendly alternative to virgin paper. However, recycling rate in Romania is not as high as in other European countries, and there is still room for improvement. Here are a few examples of the use of recycled paper in Romania:

**PAPER RECYCLING** → According to Eurostat, in 2019, the paper recycling rate in Romania was **41.4%**, meaning that only 41.4% of paper waste was recycled. Nevertheless, this data suggests that paper recycling programs are being implemented in Romania and recycling rate is slowly increasing.

### ITALY RECYCLED PAPER IS A POPULAR AND WIDELY-USED MATERIAL IN ITALY

Recycled paper is a popular and widely-used material in Italy, as it is an environmentally-friendly alternative to virgin paper. Here are a few examples of the use of recycled paper in Italy:

**PAPER RECYCLING** → According to Eurostat, in 2019, the paper recycling rate in Italy was **72.2%**, meaning that 72.2% of paper waste was recycled. This is an increase from 67.8% in 2010. This data suggests that paper recycling programs are effective in reducing waste and promoting sustainability in the graphic design industry.



## 4.3 CHAPTER IV BIODEGRADABLE PLASTICS

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Biodegradable plastics are made from natural materials such as corn starch and can break down in the environment, reducing the amount of plastic waste that ends up in landfills and oceans.

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They are considered a sustainable alternative to traditional plastics as they can reduce waste and the environmental impact of plastic production, use, and disposal and can be an important component of the circular economy, where materials are used, reused, and recycled to minimize waste and environmental impact.

The European Union has recognized the importance of biodegradable plastics in addressing plastic pollution and promoting sustainability. In fact, the EU has put in place a number of regulations to promote the use of biodegradable plastics and reduce the environmental impact of plastics. For example, it has set targets for member states to reduce the use of single-use plastics, and to increase the recycling and composting of plastics.

The [OK Compost certification](#) is a European certification for compostable products. It is granted by the [European Bioplastics Association](#) and is based on the European standard [EN 13432](#). The certification guarantees that a product meets the criteria for biodegradability and compostability, meaning that it can break down into natural substances within a specific time frame and not cause harm to the environment during the process. The OK Compost certification is recognized in many countries in Europe and is a widely accepted benchmark for environmentally friendly and sustainable products.

**The use of biodegradable plastics in graphic design can have environmental benefits, as they can decompose naturally in the environment, reducing the amount of plastic waste in landfills and oceans.**

However, their use is currently not well regulated or understood, and it is important to consider the limitations and the need for proper regulations and infrastructure to handle them.

In graphic design, biodegradable plastics can be used in various applications, such as packaging materials, marketing materials, and promotional items. For example, biodegradable plastic bags can be used for packaging products, such as books, clothing, or food. Biodegradable plastic films can be used for printing and promoting eco-friendly products, such as natural cosmetics or organic foods. Biodegradable plastic sheets can be used for making promotional materials, such as brochures, flyers, or business cards.

It is important to note that biodegradable plastics are not necessarily more environmentally-friendly than traditional plastics. The process of biodegradation is often slow and requires specific environmental conditions, such as high temperature, humidity, and the presence of microorganisms. As a result, biodegradable plastics can still contribute to environmental pollution if they are not disposed of properly.



## 4.3 CHAPTER IV BIODEGRADABLE PLASTICS

### ROMANIA

- According to Eurostat, Romania had a consumption of biodegradable plastics of 2.5 kg per capita in 2019, which is lower than the European Union average of 5.5 kg per capita. **Romania had a recycling rate of biodegradable plastics of only 5% in 2019, compared to the EU average of 30%.**
- According to the National Environmental Guard of Romania, plastic waste is one of the most common forms of pollution in Romania, with an **estimated annual generation of 800,000 tons of plastic waste.** Furthermore, the majority of plastic waste ends up in landfills, where it can take hundreds of years to degrade and release harmful chemicals into the environment.

### ITALY

- According to Eurostat, Italy had a consumption of biodegradable plastics of 5.5 kg per capita in 2019, which is on par with the European Union average of 5.5 kg per capita. **Furthermore, Italy had a recycling rate of biodegradable plastics of only 11% in 2019, compared to the EU average of 30%.**
- According to the Italian Environment Protection Agency (ISPRA), plastic waste is one of the most common forms of pollution in Italy, **with an estimated annual generation of 2.8 million tons of plastic waste.**



## 4.4 CHAPTER IV NATURAL FIBERS

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The use of natural fibers in graphic design has been growing in popularity in Europe in recent years, as a response to the increased awareness of the impact of traditional synthetic materials on the environment.

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Natural fibers, such as cotton, hemp, and flax, are renewable resources that are biodegradable and can be produced with less environmental impact than synthetic materials. These fibers are commonly used in the production of paper, textiles, and other materials for graphic design purposes. In addition, natural fibers are often preferred for their soft feel and unique textures, which can add character and interest to printed materials.

### Some of the most commonly used natural fibers in graphic design include:

- **COTTON**  
Cotton is a natural fiber that is widely used in the graphic design industry, particularly for printing and packaging applications. It is a durable, absorbent, and soft material that is easy to dye and print on.
- **HEMP**  
Hemp is a strong and durable natural fiber that is also commonly used in graphic design, especially for creating eco-friendly packaging.
- **LINEN**  
Linen is another natural fiber that is commonly used in graphic design, particularly for high-quality printing applications. It is known for its strength and durability, as well as its ability to hold fine detail.
- **JUTE**  
Jute is a natural fiber that is often used in graphic design for its eco-friendly properties. It is a strong, flexible, and biodegradable material that is commonly used for creating packaging and other design materials.
- **BAMBOO**  
Bamboo is a fast-growing plant that is becoming increasingly popular as a natural fiber for graphic design. It is known for its strength and sustainability, and it is often used for creating paper products and other design materials.

It's important to note that while these eco-friendly materials can have a lower environmental impact than traditional materials, the entire life cycle of the material should be taken into consideration, including the sourcing, production, and disposal. Additionally, it's important to consider the specific use case and the intended audience to determine which eco-friendly material is the best fit for a specific project.

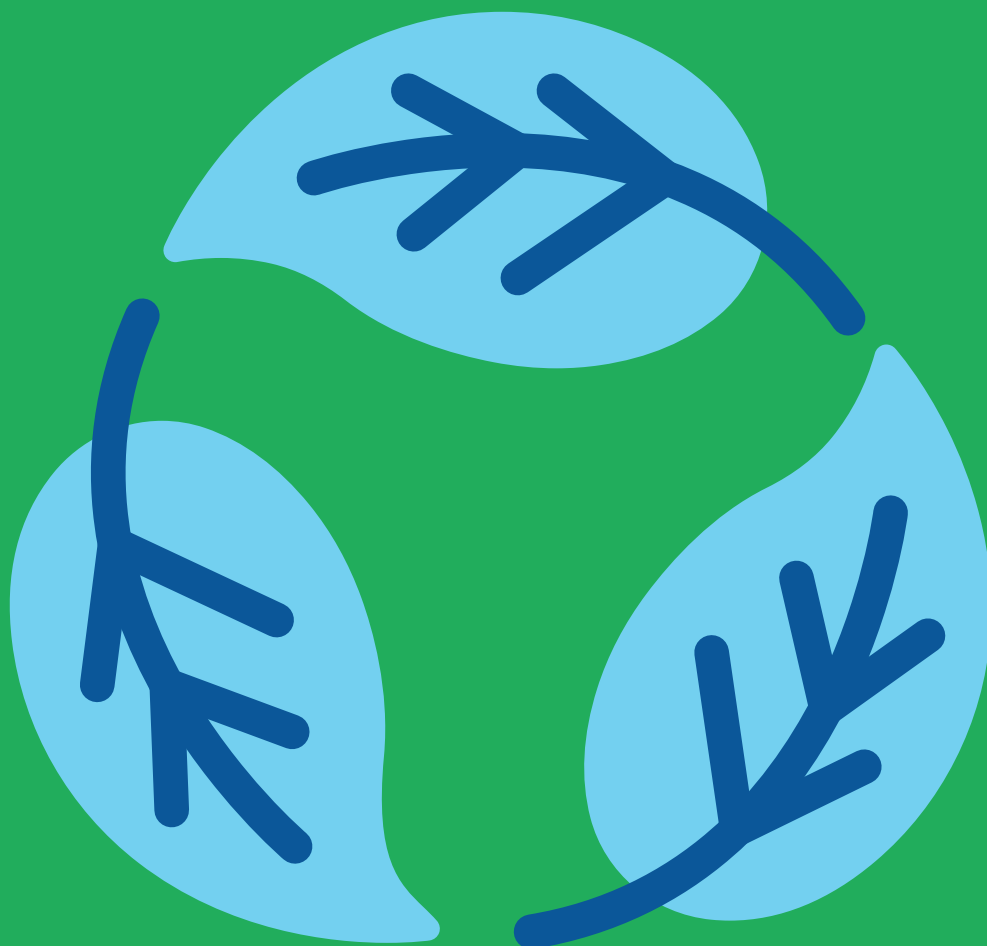


Here are some tips and approaches for graphic design teachers to introduce the use of eco-friendly materials in the curriculum:

## 4.5 CHAPTER IV

# TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

- **START WITH THE BASICS**  
Discuss the importance of sustainability in design and how it can positively impact the environment.
- **INCORPORATE REAL-WORLD EXAMPLES**  
Show students practical examples of designers who are using eco-friendly materials and the positive impact it has on the environment and communities.
- **HANDS-ON LEARNING**  
Provide opportunities for students to work with eco-friendly materials in their own design projects and reflect on their experiences.
- **PROMOTE RESEARCH AND DEVELOPMENT**  
Encourage students to research and explore eco-friendly materials, their properties, and applications. This can also be an opportunity to introduce them to new materials they may not have encountered before.
- **FOSTER A CULTURE OF SUSTAINABILITY**  
Emphasize the importance of sustainability in the design process and encourage students to adopt eco-friendly practices in their personal and professional lives.
- **UTILIZE TECHNOLOGY**  
Use digital tools such as sustainability calculators or virtual simulations to demonstrate the environmental impact of different materials and their alternatives.
- **ENCOURAGE STUDENTS TO GET INVOLVED**  
Encourage students to participate in sustainability initiatives, events, and campaigns that promote eco-friendly materials and practices in graphic design.



## CHAPTER V

### REUSING MATERIALS

#### 5.1.

Importance

#### 5.2.

Recycling Programmes

#### 5.3.

Tips and Types  
for Graphic Design Teachers



## 5.1 CHAPTER V IMPORTNACE

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Reusing materials in graphic design is important because by adopting a recycling programme, graphic designers can contribute to reducing the waste generated by their industry and promote sustainability.

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By reusing materials, graphic designers can help decrease the demand for new resources, which contributes to preserving the environment and reducing greenhouse gas emissions. Moreover, reusing materials is also an efficient way to save time and money, as it eliminates the need for purchasing new materials or starting a project from scratch. The use of recycled materials, such as recycled paper or recycled plastics, can also bring a new aesthetic and visual interest to the designs. Reusing materials also helps promote environmental awareness, as it shows that the designer is conscious of the impact their work has on the environment.

**By embracing sustainable practices, graphic designers can demonstrate their commitment to sustainability and contribute to a better future.**

### SOME EXAMPLES OF REUSING MATERIALS IN GRAPHIC DESIGN ARE:

- **THE USE OF SCRAP PAPER FOR SKETCHING AND NOTE-TAKING.**  
This helps to reduce the amount of paper used and also saves money on buying new sketch pads.
- **THE USE OF PAPER SCRAPS FOR CREATING COLLAGES, origami or other crafts.** This can be a creative and fun way to repurpose materials that would otherwise be discarded.
- **THE USE OF SCRAPS TO CREATE LIMITED-EDITION PRODUCTS,**  
such as book covers, postcards, or other items that can be sold or given as gifts.
- **THE USE OF SCRAPS TO CREATE PROTOTYPES OR MOCK-UPS**  
for testing the design before printing the final version.





## 5.1 CHAPTER V IMPORTNACE

There are many ways to reuse materials in graphic design, it's important to think creatively and consider the possibilities of repurposing materials before discarding them.

By adopting a circular economy mindset, graphic designers can contribute to reducing waste and preserving natural resources.

According to Eurostat, in 2019, the paper recycling rate in the European Union was 72.2%, meaning that

**72.2%** of paper waste was recycled.

This is an increase from **67.8%** in 2010.

→ **This data suggests that paper recycling programs are effective in reducing waste and promoting sustainability in the graphic design industry.**

Additionally, according to the European Commission, the recycling rate of plastic packaging in the European Union

was **30.9%** in 2019.

This is an increase from **22.1%** in 2010.

→ **This data suggests that by embracing a recycling program, graphic designers can play an important role in creating a more sustainable future.**



## 5.2 CHAPTER V RECYCLING PROGRAMMES

### HERE ARE SOME CONCRETE EXAMPLES AND DATA ON RECYCLING PROGRAMS IN EUROPE:

- **DESIGN FOR RECYCLING:**  
Some graphic design companies are implementing “Design for recycling” approach, where the design of a product is optimized for recyclability. This can include using materials that are easily separable, using standard sizes and shapes, and avoiding the use of materials that are difficult to recycle.
- **PARTNERING WITH RECYCLING COMPANIES:**  
Some graphic design companies partner with recycling companies to ensure that the materials they use are recycled properly. This can include working with paper mills that use recycled paper and with plastic recycling companies that use recycled plastic in their products.
- **ENCOURAGING CLIENTS AND PARTNERS TO RECYCLE:**  
Many graphic design companies encourage their clients and partners to recycle materials used in the final design. This can include providing recycling bins at the office, providing information on how to recycle materials, and encouraging clients to recycle materials used in the final design.

It's important to note that recycling programs can vary depending on the country and region.

**Additionally, it's important for graphic design companies to consider the entire life cycle of the materials they use, including sourcing, production, and disposal, to minimize the environmental impact.**

### ROMANIA

Recycling programs in Romania have been developed and implemented in the recent years to address the environmental challenges caused by the waste, but they still need to be further implemented and developed. Here are a few examples of recycling programs in Romania:

- **NATIONAL RECYCLING PROGRAM**  
Romania has a national recycling program, which aims to increase the recycling rate and reduce waste. This program includes recycling initiatives for paper, plastic, metal, and glass, as well as separate collection of organic waste.
- **REGIONAL RECYCLING PROGRAMS**  
Many cities in Romania have their own recycling programs, such as the city of Bucharest, which has implemented a program for separate collection of waste, with the aim of increasing the recycling rate and reducing the amount of waste sent to landfills.



## 5.2 CHAPTER V RECYCLING PROGRAMMES

- **LANDFILL TAX**  
Romania has implemented a landfill tax, which is a fee paid by companies for the disposal of waste in landfills. This fee is intended to encourage the recycling of waste and the reduction of the amount of waste sent to landfills.
- **ECO-DESIGN REGULATIONS**  
Romania has also implemented regulations on eco-design that aim to reduce the environmental impact of products by promoting the use of recycled materials, reducing the use of hazardous substances, and increasing the efficiency of products throughout their lifecycle.
- **GREEN PROCUREMENT**  
Romania has also started implementing green procurement regulations, which require public institutions to prioritize environmentally friendly products and services when making purchases.

Romania still needs to improve the management of waste and the recycling rate, so companies can also be part of the change by implementing a sustainable approach in their internal processes.

## ITALY

Recycling programs in Italy vary depending on the region, but there are a number of national and regional initiatives in place to encourage recycling and reduce waste. Here are a few examples:

- **NATIONAL RECYCLING PROGRAM**  
Italy has a national waste programme **PNGR**<sup>16</sup>, which aims to increase the recycling rate and reduce waste. This program includes recycling initiatives for paper, plastic, metal, and glass, as well as separate collection of organic waste.
- **ECO-CONTRIBUTIONS**  
Many regions in Italy have implemented “eco-contributions” which are fees paid by the consumers for the disposal of certain products such as batteries and light bulbs. This fee is intended to encourage the recycling of these products.
- **ECO-BONUS**<sup>17</sup>  
Italy has a national incentive program called “Eco-bonus” which provides a financial incentive for citizens who purchase energy-efficient appliances, such as washing machines, refrigerators, and air conditioners, or who install solar panels or heat pumps in their homes.
- **ECO-DESIGN**<sup>18</sup>  
Italy has also implemented a “Eco-design” regulation that aims to reduce the environmental impact of products by promoting the use of recycled materials, reducing the use of hazardous substances, and increasing the efficiency of products throughout their lifecycle.

### NOTE

16— [https://www.cisl.it/wp-content/uploads/2022/07/Programma\\_nazionale\\_rifiuti.pdf](https://www.cisl.it/wp-content/uploads/2022/07/Programma_nazionale_rifiuti.pdf)

17— <https://ecobonus.mise.gov.it/>

18— <https://www.anima.it/cosa-facciamo/area-tecnica/energia/direttiva-2009-125-ce-ecodesign.kl#:~:text=La%20Direttiva%202009%2F125%2FCE,eccetto%20quelli%20del%20settore%20trasporti.>



### 5.3 CHAPTER V

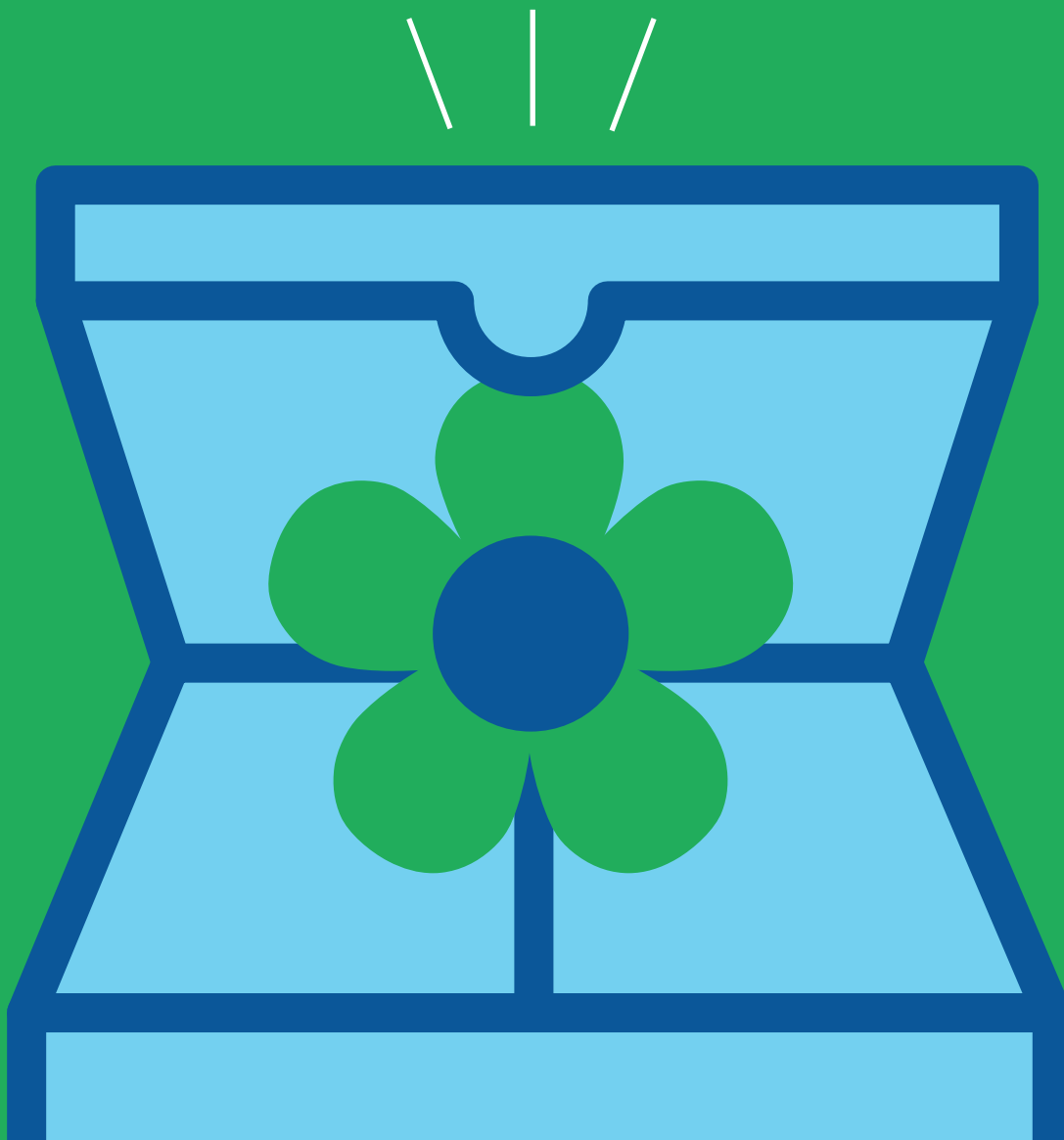
## TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips and types for graphic design teachers on how to [introduce reusing materials in the curriculum](#)

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- **START WITH A LECTURE**  
Begin by giving a lecture to students on the importance of reusing materials and its impact on the environment. Discuss the benefits of reducing waste and conserving resources.
- **CLASS PROJECTS**  
Encourage students to use recycled materials in their projects. This could be anything from paper, cardboard, or old magazines to fabric scraps. Encourage students to be creative and find new uses for materials that would otherwise end up in the landfill.
- **GUEST SPEAKERS**  
Invite experts in the field of sustainable design to come and talk to students about their experiences and the role that reusing materials plays in their work.
- **VISITS TO RECYCLING FACILITIES**  
Take students on a field trip to a recycling facility to see the process of reusing materials first-hand.
- **ONLINE RESOURCES**  
Provide students with online resources and articles about sustainable design practices, including reusing materials. Encourage them to research the subject further and share their findings with the class.
- **CREATIVE CHALLENGES**  
Set up creative challenges for students to design products or create art using only recycled materials. This will encourage students to think critically about the resources they use and how they can be reused.
- **GROUP DISCUSSIONS**  
Encourage group discussions on the topic of reusing materials. Ask students to share their experiences, challenges, and ideas for making the most out of limited resources.



## CHAPTER VI

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### MINIMIZING PACKAGING

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**6.1.**  
Why and How

**6.2.**  
Tips and Types  
for Graphic Design Teachers



## 6.1 CHAPTER VI

### WHY AND HOW

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Minimizing packaging can help reduce the amount of waste produced when mailing or delivering final designs.

This can include using minimal packaging materials such as envelopes instead of boxes.

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### Here are some concrete examples and data on minimizing packaging:

- **USE OF ENVELOPES**  
Instead of using boxes to mail or deliver final designs, many graphic design companies use envelopes which take up less space, use less materials and are less heavy to transport, reducing the environmental impact.
- **USE OF BIODEGRADABLE PACKAGING**  
Some graphic design companies use biodegradable packaging materials such as paper-based mailing envelopes, biodegradable plastics, and cellulose-based materials. These materials can be more sustainable alternatives to traditional packaging materials and can break down in the environment, reducing the amount of waste that ends up in landfills.
- **USE OF REUSABLE PACKAGING**  
Some graphic design companies use reusable packaging materials such as cloth bags, or recycled plastic bags. These materials can be used multiple times, reducing the amount of waste produced.
- **USE OF DIGITAL DELIVERY**  
Some graphic design companies use digital delivery methods such as email or cloud-based file sharing platforms, eliminating the need for physical packaging and shipping altogether.
- **USE OF MINIMALISTIC PACKAGING**  
Some graphic design companies use minimalistic packaging, this means that they use the minimum amount of materials necessary to protect the final design during shipping or delivery. This can include using a single sheet of paper or a simple envelope instead of a bulky box.

According to the [European Environment Agency](https://www.eea.europa.eu/)<sup>19</sup>, packaging waste is one of the most significant environmental issues in Europe, with an estimated 88 million tons of packaging waste generated in Europe in 2018.

The use of minimal packaging can help to reduce this waste, as well as reducing the carbon footprint associated with transport and disposal of packaging waste.

#### NOTE

19— <https://www.eea.europa.eu/>



## 6.2 CHAPTER VI

# TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips and types of activities that graphic design teachers can use to introduce the [topic of minimizing packaging](#) in the curriculum.

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- **[CLASS DISCUSSIONS](#)**  
Start a class discussion about packaging waste and its impact on the environment. Encourage students to share their thoughts and experiences with packaging.
- **[RESEARCH PROJECTS](#)**  
Assign students to research various packaging designs and materials and to analyze their impact on the environment.
- **[DESIGN CHALLENGES](#)**  
Set up a design challenge where students must create packaging designs that minimize waste and use sustainable materials.
- **[INDUSTRY GUEST SPEAKERS](#)**  
Invite professionals from the packaging industry to speak to the class about sustainable packaging practices and innovations.
- **[FIELD TRIPS](#)**  
Take students on a field trip to a recycling plant or a company that specializes in sustainable packaging to show them the process and impact of packaging waste firsthand.
- **[HANDS-ON PROJECTS](#)**  
Assign students practical projects where they must design and create eco-friendly packaging for real products.
- **[ONLINE RESOURCES](#)**  
Provide students with access to online resources, such as videos and articles, about sustainable packaging practices and innovations.



## CHAPTER VII

### CHOOSING SUSTAINABLE PRINTING TECHNIQUES

**7.1.**  
Why

**7.2.**  
Digital Printing

**7.3.**  
Led Printing

**7.4.**  
Printing without Water

**7.5.**  
Tips and Types  
for Graphic Design Teachers





## 7.1 CHAPTER VII

### WHY

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Sustainable printing techniques refer to the methods and processes used in the printing industry that prioritize environmental protection, conservation, and reducing waste.

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These techniques are aimed at reducing the impact of printing on the environment by using environmentally friendly materials, reducing energy consumption, and promoting waste reduction and recycling.

Sustainable printing includes a range of processes such as using water-based inks, digital printing, recycling of printing materials, using biodegradable and compostable materials, and using renewable energy sources for printing.

**Implementing sustainable printing techniques can help graphic designers reduce their carbon footprint, minimize waste and pollution, and promote environmentally responsible practices in the printing industry.**



## 7.2 CHAPTER VII

# DIGITAL PRINTING

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Digital printing is a sustainable printing method that uses digital files, such as PDFs, to produce printouts. It eliminates the need for film and plates, reducing waste and energy consumption.

This is because, in traditional offset printing, printing plates have to be made for each colour and each page, which generates waste and consumes energy and resources.

Digital printing, on the other hand, uses digital files to produce printouts, eliminating the need for plates, and reducing waste and energy consumption.

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Digital printing is also highly customizable, allowing for short run and on-demand printing, which can help to reduce the need for warehousing and inventory. In traditional offset printing, a large amount of paper is printed at once, and it's often necessary to print more than what is needed to meet the demand, this generates waste, and this excess has to be stored until it's needed. Digital printing, on the other hand, allows for short runs and on-demand printing, which means that only the amount of paper that is needed is printed, reducing the need for warehousing and inventory, and also reducing the environmental impact of the storage.

Digital printing also allows for more efficient use of resources, as it eliminates the need for make-ready, which is the process of adjusting the printing press for a new job, this process consumes energy and resources. Digital printing also allows for more efficient use of ink, as it's more precise and accurate, reducing the amount of ink used, and also reducing the environmental impact of the ink production.

Digital printing is a sustainable option that is well suited for printing on a wide range of materials such as paper, cardboard, and fabrics. It is also a good option for printing on non-porous surfaces such as vinyl, film, and foil. This method is suitable for printing on materials that require a high level of detail and colour accuracy. The results of this printing method are highly precise and accurate, but the cost for production can be higher than traditional printing methods.

**All these factors make digital printing a more sustainable option for the graphic design industry, and it's in line with the EU's Circular Economy Action Plan.**



## 7.3 CHAPTER VII

# LED PRINTING

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LED (Light-Emitting Diode) printing is a sustainable printing technique that uses a series of light-emitting diodes to produce an image on a print medium.

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### THE KEY CHARACTERISTICS OF LED PRINTING INCLUDE:

- **ENERGY EFFICIENCY**  
LED printing uses less energy compared to traditional printing methods, as the process only requires electricity to power the diodes.
- **ENVIRONMENTALLY FRIENDLY**  
LED printing does not produce harmful VOCs (Volatile Organic Compounds) or emissions, which makes it an environmentally-friendly printing technique.
- **HIGH QUALITY PRINTING**  
LED printing produces high-quality prints with sharp and vibrant colours, making it ideal for a wide range of printing applications.
- **DURABILITY**  
LED printing is a durable printing method, as the prints produced are resistant to fading, water, and abrasion.
- **COST-EFFECTIVE**  
LED printing is cost-effective in the long run, as it reduces the need for frequent ink replacements and maintenance costs.
- **VERSATILITY**  
LED printing is versatile, as it can be used to print on a variety of materials, including paper, plastic, metal, and fabric.

Overall, LED printing is a sustainable and cost-effective printing technique that offers high-quality printing results while reducing environmental impact and is suitable for printing on a wide range of materials, including paper, cardboard, and fabrics.

IT IS ALSO A GOOD OPTION FOR PRINTING ON NON-POROUS SURFACES SUCH AS VINYL, FILM, AND FOIL.



## 7.4 CHAPTER VII PRINTING WITHOUT WATER

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Printing without water is another sustainable printing method that eliminates the use of water in the printing process.

This not only reduces water consumption but also eliminates the need for wastewater treatment and disposal.

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### SOME OF THE MAIN ADVANTAGES ARE:

- **WATERLESS PRINTING TECHNOLOGY**  
This printing method uses a special type of ink that does not require water for printing and does not mix with water.
- **ENVIRONMENTALLY FRIENDLY**  
This technique reduces water consumption and waste, making it a more environmentally friendly option compared to traditional printing methods.
- **IMPROVED PRINT QUALITY**  
The absence of water in the printing process eliminates the risk of smudging, bleeding or soaking into the paper, resulting in a sharper and clearer print.
- **INCREASED PRODUCTIVITY**  
Since this technique does not require water, the time and energy required to prepare the press for printing is reduced, leading to increased productivity.
- **IMPROVED COLOR CONSISTENCY**  
Without water to dilute the ink, the color consistency of the print is improved and remains consistent throughout the printing run.
- **COST SAVINGS**  
Printing without water can reduce the cost of printing by eliminating the need for water and energy consumption.
- **LESS PAPER WASTE**  
With this printing technique, there is less paper waste because the ink dries quickly and does not soak into the paper, reducing the need for paper to be discarded.
- **REDUCED ENERGY USAGE**  
The elimination of water in the printing process reduces the energy usage required for heating and cooling the press.
- **DECREASED DOWNTIME**  
This printing technique reduces downtime and maintenance requirements, as there is no need to clean the press and refill the water supply.

Overall, printing without water is a more sustainable option for the graphic design industry, as it reduces water consumption, eliminates the need for wastewater treatment and disposal, eliminates the need for the chemical treatment of the water, eliminates the need for the water transportation and storage, and is more versatile. All these factors make printing without water a more sustainable option for the graphic design industry, and it's in line with the EU's Circular Economy Action Plan.



## 7.5 CHAPTER VII TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips and types for graphic design teachers on how to introduce [sustainable printing techniques](#) in the curriculum

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- **[INTEGRATE SUSTAINABILITY INTO THE DESIGN PROCESS](#)**  
Encourage students to think about sustainability from the very beginning of the design process and incorporate it into their design decisions.
- **[HANDS-ON DEMONSTRATIONS](#)**  
Show students how to use eco-friendly printing techniques, such as digital printing, water-based inks, and vegetable inks. Demonstrate how these techniques are better for the environment compared to traditional printing methods.
- **[CLASSROOM ACTIVITIES](#)**  
Assign projects that focus on sustainable printing techniques and challenge students to find ways to reduce waste and use eco-friendly materials.
- **[GUEST SPEAKERS](#)**  
Invite industry experts to come and speak to students about the importance of sustainable printing techniques and how they are being used in the industry.
- **[FIELD TRIPS](#)**  
Take students on a field trip to a printing company that uses sustainable techniques. This will give students a firsthand look at how sustainable printing works in real life.
- **[CASE STUDIES](#)**  
Share case studies of companies that have successfully implemented sustainable printing techniques. This will give students a real-world example of how sustainability can be incorporated into the design process.
- **[ONLINE RESOURCES](#)**  
Provide students with online resources, such as articles, videos, and podcasts, that focus on sustainable printing techniques. Encourage students to research and learn about the topic on their own.



## CHAPTER VIII

### USING VIRTUAL MEETING AND PRESENTATIONS

**8.1.**  
Why and How

**8.2.**  
Tips and Types  
for Graphic Design Teachers



## 8.1 CHAPTER VIII

# WHY AND HOW

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Virtual presentations and meetings in graphic design are important for the environment because they reduce the need for travel and transportation, which can have a significant impact on the environment.

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By using virtual communication tools, designers can attend meetings and presentations from the comfort of their own homes or offices, eliminating the need for travel and reducing carbon emissions from transportation. Additionally, virtual presentations and meetings can also reduce paper usage, as all information can be shared and stored electronically, rather than being printed and distributed. This reduces the amount of waste generated, as well as the energy used to manufacture and transport paper. Furthermore, virtual meetings and presentations also have the potential to reduce energy consumption by using less power-intensive equipment, such as laptops and smartphones, as compared to larger equipment such as projectors and air conditioning used in a physical meeting room.

Virtual meetings and presentations are not only environmentally friendly, but they also offer a number of other benefits for the design process. They allow for real-time collaboration and feedback, enabling designers to work more efficiently and effectively. Additionally, virtual meetings and presentations can be recorded and stored for future reference, providing a convenient way to review and share design information.

**There are several examples of virtual meeting and presentation tools that are commonly used in Europe for graphic design.**

### SOME EXAMPLES INCLUDE:

- **ZOOM**  
A popular video conferencing tool that allows for real-time meetings and presentations. It offers features such as screen sharing, recording, and the ability to host webinars and virtual events.
- **SKYPE**  
A well-known tool for video and voice calls, that also allows screen sharing and recording.
- **GOOGLE MEET**  
A video conferencing tool that is integrated with the G Suite of tools, it allows for real-time meetings and presentations, and also offer features such as screen sharing, recording and live captions.
- **ADOBE CONNECT**  
A web conferencing tool that is specifically designed for creative professionals, it allows for real-time meetings, presentations and collaboration, with features such as screen sharing, recording, and the ability to host virtual events.
- **MICROSOFT TEAMS**  
A collaboration platform that integrates with Office 365, it allows for real-time meetings, presentations, and collaboration with features such as screen sharing, recording, and the ability to host virtual events.



## 8.1 CHAPTER VIII WHY AND HOW

- **SLACK**  
A popular communication tool that allows for real-time messaging, file sharing, and collaboration. It can be integrated with other tools such as Zoom and Google Meet, making it a convenient option for virtual meetings and presentations.

These are some of the most popular virtual meeting and presentation tools that are used in Europe, however many other tools exist, and the best choice will depend on the specific needs of the project and the design team.

Many companies in Europe are implementing virtual meeting and presentation tools as a part of their sustainability efforts. For example, the Danish engineering firm [Ramboll](#)<sup>20</sup> has implemented a virtual meeting platform that allows their employees to conduct meetings and presentations remotely, reducing their carbon footprint by eliminating the need for travel.

### IN CONCLUSION

**Virtual meetings and presentations in Europe can have a significant impact on reducing the carbon footprint by eliminating the need for physical travel and reducing transportation-related emissions.**

Many companies in Europe are already implementing these tools as a part of their sustainability efforts.

### NOTE

<sup>20</sup>— <https://ramboll.com/-/media/11a6d298ab864d4782bd6da90e25051b.pdf>





## 8.2 CHAPTER VIII TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips and types of activities for graphic design teachers on how to introduce [the use of virtual meetings and presentations](#) in the curriculum

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- **[HANDS-ON PROJECTS](#)**  
Have students work on projects that require virtual presentations, such as creating an online portfolio or an e-book. This will help them get a hands-on experience with virtual tools and understand their benefits.
- **[DISCUSSIONS AND CASE STUDIES](#)**  
Encourage students to discuss and analyze real-life examples of companies or organizations that have successfully implemented virtual presentations. This will help them understand the impact of virtual presentations and how they can be used in different contexts.
- **[COLLABORATIVE ACTIVITIES](#)**  
Encourage students to work together in small groups to create virtual presentations. This will help them develop teamwork skills and also familiarize themselves with collaboration tools.
- **[WORKSHOPS AND GUEST SPEAKERS](#)**  
Invite experts in the field of virtual presentations to come and speak to students. This can provide an opportunity for students to learn about the latest tools and techniques available for virtual presentations.
- **[ONLINE RESOURCES](#)**  
Provide students with access to online resources, such as tutorials and videos, that can help them learn about virtual presentations and the various tools available.



## CHAPTER IX

### OPTIMIZING THE DESIGN PROCESS

**9.1.**  
Why

**9.2.**  
How

**9.3.**  
Tips and Types  
for Graphic Design Teachers



## 9.1 CHAPTER IX WHY

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Reducing the number of revisions in graphic design is important because it saves time and resources. It streamlines the design process and helps to ensure that projects are completed on time and within budget.

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### HERE ARE A FEW CONCRETE EXAMPLES OF WHY REDUCING REVISIONS IS SO IMPORTANT IN GRAPHIC DESIGN:

- **REDUCED WASTE**  
Each revision generates additional waste in the form of paper, ink, and energy used to produce new proofs or mockups. By reducing the number of revisions, graphic designers can minimize the amount of waste produced during a project. For example, in the traditional graphic design process, a designer might create several drafts of a design, print them out for review, make changes based on feedback, and repeat this process multiple times until the final design is approved. By incorporating digital tools and collaboration platforms, graphic designers can work together with clients and stakeholders in real-time, minimize the need for physical proofs, and reduce the amount of paper and ink used. This approach results in significant waste reduction and supports the goal of sustainability in the graphic design industry
- **IMPROVED ACCURACY**  
When revisions are kept to a minimum, there is a lower risk of errors and mistakes being introduced into the design. This leads to a more accurate and high-quality end product.
- **INCREASED EFFICIENCY**  
Each revision requires time and attention from both the client and the designer. By reducing the number of revisions, designers can use their time more efficiently and focus on other projects or tasks.
- **BETTER CLIENT RELATIONS**  
When projects are completed with fewer revisions, clients are often more satisfied with the end result. This can lead to better relationships and more repeat business for the designer.

By taking steps to minimize the number of revisions in a graphic design project, designers can create a more sustainable and efficient workflow. This benefits both the environment and the bottom line.



## Reduce the number of revisions in the graphic design process

### 9.2 CHAPTER IX HOW

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There are several ways to reduce the number of revisions in the graphic design process

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- **CLEAR COMMUNICATION**  
Before starting a project, it's important to establish clear communication with the client and ensure that their expectations are met. This can be done by creating a detailed brief outlining the project goals, target audience, and any specific requirements.
- **USE OF MOOD BOARDS AND SKETCHES**  
Mood boards and sketches can be used to present the initial concept and design direction to the client, before moving on to the final design. This can help to reduce the number of revisions by ensuring that the client is happy with the direction of the project from the start.
- **FEEDBACK AND REVISIONS TRACKING**  
Use design software that tracks feedback and revisions to ensure that all comments and suggestions are addressed. This will help to reduce the number of revisions by making sure that all feedback is captured and handled in a timely manner.
- **USE OF DESIGN TEMPLATES**  
Using design templates can help to reduce the number of revisions by providing a consistent and efficient design process. This can save time and resources, allowing the designer to focus on creating unique and effective designs for the client.
- **COLLABORATION TOOLS**  
Using collaboration tools such as cloud-based design software can help to reduce the number of revisions by allowing multiple designers to work on the same project simultaneously. This can help to ensure that feedback and revisions are handled in a timely manner, reducing the number of iterations required.  
  
Some examples of cloud-based collaboration tools that graphic designers can use to reduce the number of revisions and avoid unnecessary waste include:
  - a) — Adobe Creative Cloud**  
This software suite offers a range of tools for graphic design, including Photoshop, Illustrator, and InDesign. It also includes a collaboration feature that allows multiple designers to work on the same project simultaneously and share their work in real-time.
  - b) — Figma**  
This web-based design tool allows designers to work on the same project simultaneously and share their work with others in real-time. It also includes a version control feature that allows designers to easily revert to previous versions of a design if needed.



## 9.2 CHAPTER IX HOW

### c) — In Vision

This cloud-based design platform allows designers to create interactive prototypes and share them with others for feedback. It also includes a collaboration feature that allows multiple designers to work on the same project simultaneously and share their work in real-time.

### d) — Canva

It's a graphic-design tool website, allows users to create a wide variety of designs using its templates or creating custom designs from scratch. It also includes a collaboration feature that allows multiple users to work on the same design at the same time, and the design is automatically saved.

- **USAGE OF DESIGN GUIDELINES**

Establishing design guidelines can help to ensure that the design is consistent and meets the client's expectations. This can reduce the number of revisions by providing a clear direction for the design, and can also help to ensure that the final design meets the client's requirements.

Overall, optimizing the design process by reducing the number of revisions and using design templates can help to significantly reduce the amount of waste produced during the design process.

**This can not only benefit the environment but also save resources and money for the graphic design companies.**



## 9.3 CHAPTER IX TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips for graphic design teachers on how to introduce the topic of [optimizing the design process](#) in the curriculum

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- **[START WITH THE BASICS](#)**  
Teach the students about the design process and the different stages involved, including research, conceptualization, prototyping, and final execution.
- **[FOCUS ON EFFICIENCY](#)**  
Emphasize the importance of streamlining the design process, reducing waste, and using technology and tools that can help increase efficiency.
- **[ENCOURAGE COLLABORATION](#)**  
Teach students about the benefits of working in teams and how collaboration can lead to more creative and effective design solutions.
- **[DISCUSS SUSTAINABILITY](#)**  
Introduce students to sustainable design principles, such as reducing waste and using eco-friendly materials, and explain how these principles can be incorporated into the design process.
- **[USE REAL-WORLD EXAMPLES](#)**  
Provide students with case studies and examples of companies and designers who have successfully optimized their design processes, and ask them to analyze and discuss these examples.
- **[INCORPORATE HANDS-ON PROJECTS](#)**  
Assign projects that require students to optimize their design processes and implement sustainable design principles.
- **[ENCOURAGE FEEDBACK AND REFLECTION](#)**  
Encourage students to reflect on their design processes and seek feedback from their peers and instructors. This will help them identify areas for improvement and develop better design habits over time.



## CHAPTER X

### INKS AND SOLVENTS

**10.1.**  
Types

**10.2.**  
Application

**10.3.**  
Tips and Types  
for Graphic Design Teachers



## 10.1 CHAPTER X TYPES

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Inks and solvents used in graphic design can have a significant impact on the environment.

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Traditional solvent-based inks contain volatile organic compounds (VOCs) that can contribute to air pollution and ozone depletion. These inks also require the use of solvents for cleaning and printing, which can add to the environmental impact.

Water-based inks, on the other hand, are much more environmentally friendly. They do not contain **VOCs**, and the water used in the printing process can be easily recycled. These inks also have the added benefit of being safer for printers to use, as they do not require the use of potentially harmful solvents.

Vegetable inks are a type of printing ink made from natural, plant-based ingredients such as soybeans, corn, and linseed oil. They are considered an eco-friendly alternative to traditional petroleum-based inks, as they have a lower impact on the environment and human health. Vegetable inks are biodegradable and produce less harmful emissions during printing. They also have a more vibrant color range and are compatible with a wider range of substrates, including recycled paper and other environmentally-friendly materials. When choosing between different types of inks, it is important to consider factors such as print quality, environmental impact, and cost. Vegetable inks can be a good choice for graphic designers who want to minimize their environmental footprint and promote sustainability in their work.

Water-based inks and solvents are a more sustainable option that can help reduce the environmental impact of the printing process.

In Europe, the EU has set regulations on **VOCs**<sup>21</sup> emissions from printing inks, solvents and cleaning agents for graphic arts industry.

These regulations aim to limit the environmental impact of these products. In addition, the EU has set targets for member states to increase the recycling and composting of paper. This can also be considered when choosing the most sustainable printing options.

It is also important to consider the entire lifecycle of the design, from the sourcing of materials to the disposal of waste. By reducing the environmental impact of inks and solvents, designers can help minimize the overall ecological footprint of their projects and contribute to a more sustainable future.

### NOTE

21— [https://efca.net/?page\\_id=96](https://efca.net/?page_id=96)





## 10.2 CHAPTER X APPLICATION

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Water-based inks are less used than solvent-based inks because they have traditionally been considered less durable and less resistant to fading.

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Additionally, water-based inks have a longer drying time than solvent-based inks, which can slow down the printing process. However, advances in technology have led to the development of water-based inks that have similar durability and resistance as solvent-based inks, making them a more sustainable option. It's important for graphic designers to weigh the benefits and drawbacks of both types of inks and make an informed decision based on the specific needs of their project and their commitment to sustainability. It's important to note that while each type of ink may be used in a variety of printing applications, some inks may be better suited to certain printing processes than others.

### HERE ARE SOME EXAMPLES FOR THEIR APPLICATION:

#### a) SOLVENT-BASED INKS:

- Large format printing (such as banners, trade show graphics, and murals)
- Outdoor and indoor signs
- Vehicle graphics
- Wallcoverings
- Textile printing

#### b) WATER-BASED INKS:

- Package printing (such as food and beverage packaging, cosmetics, and household products)
- Textile printing (such as clothing and accessories)
- Paper printing (such as books, brochures, and catalogs)
- Stationary printing (such as letterhead, envelopes, and business cards)
- Interior wall graphics

#### c) VEGETABLE INKS:

- Paper printing
- Packaging printing
- Textile printing
- Greeting cards
- Letterpress printing



## 10.3 CHAPTER X TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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The teaching of inks and solvents in schools in Europe should focus on their impact on the environment and their safe handling and disposal.

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It should educate students on the types of inks and solvents available, their properties and the best practices for using them sustainably. Additionally, students should be taught about the regulations and standards related to inks and solvents in the EU, such as [REACH](#)<sup>22</sup>, which controls the use and disposal of chemicals in the EU.

By incorporating this education in their curriculum, students will be prepared to make informed decisions about inks and solvents in their future careers as graphic designers.

### HOW TO INTRODUCE SUSTAINABLE INKS AND SOLVENTS IN THEIR CURRICULUM:

- **[START WITH THE BASICS](#)**  
Begin by teaching students about the different types of inks and solvents available and the impact they have on the environment.
- **[PROVIDE REAL-LIFE EXAMPLES](#)**  
Use examples of companies that are using sustainable inks and solvents to create environmental awareness and inspire students.
- **[ENCOURAGE RESEARCH AND EXPLORATION](#)**  
Assign projects where students can research and experiment with different types of sustainable inks and solvents.
- **[HIGHLIGHT THE IMPORTANCE OF SUSTAINABILITY](#)**  
Emphasize the significance of using sustainable inks and solvents in graphic design, and how it can contribute to a greener future.
- **[PROMOTE COLLABORATION WITH INDUSTRY](#)**  
Partner with local printing companies to provide students with hands-on experience and exposure to sustainable printing practices.
- **[ENCOURAGE CERTIFICATION](#)**  
Encourage students to pursue certifications in sustainable printing practices to further their knowledge and skills in this area.

By incorporating sustainable inks and solvents into the graphic design curriculum, teachers can equip students with the knowledge and skills to make informed choices in their future careers and contribute to a more sustainable future for the industry.

#### NOTE

22— [https://ec.europa.eu/environment/chemicals/reach/reach\\_en.htm](https://ec.europa.eu/environment/chemicals/reach/reach_en.htm)



## CHAPTER XI

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### PRINT ON DEMAND

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**11.1.**  
Why

**11.2.**  
Tips and Types  
for Graphic Design Teachers



## 11.1 CHAPTER XI WHY

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Print-on-demand (POD) services are a sustainable option for graphic design as they allow for materials to be printed only as they are needed, reducing the amount of waste produced.

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This can include printing business cards, brochures, and other marketing materials as they are needed, rather than printing a large quantity that may not be used.

**Additionally, print-on-demand services can also help reduce the carbon footprint associated with transportation and distribution of materials.**

This method is particularly useful for businesses or organizations that have fluctuating demand for printed materials. Furthermore, print-on-demand services can also be used for personal designs such as invitations, photo books and custom printed products.

This can be done through online platforms which are available for customers to upload their designs, choose the quantity and have them printed and delivered.

### ADVANTAGES OF PRINT ON DEMAND:

- **LOW INVENTORY COSTS**  
There is no need to hold large quantities of printed materials in stock, reducing the financial risk associated with unsold products.
- **INCREASED EFFICIENCY**  
Automated printing processes allow for faster and more accurate printing, reducing lead times and increasing production speed.
- **CUSTOMIZATION**  
The ability to print a single item or small quantities of items allows for more customization, such as printing different versions of a product for different regions or languages.
- **REDUCED ENVIRONMENTAL IMPACT**  
With the elimination of excess inventory, print on demand reduces waste, energy consumption, and greenhouse gas emissions associated with printing and shipping.
- **INCREASED PROFITABILITY**  
With the elimination of unsold inventory, businesses can maximize their profits by only printing what is needed, when it is needed.



## 11.1 CHAPTER XI WHY

### DISADVANTAGES OF PRINT ON DEMAND:

- **HIGHER COSTS PER UNIT**  
Printing individual items or small quantities can be more expensive than printing large runs of the same product.
- **LIMITATIONS IN DESIGN**  
Some print on demand providers may have restrictions on the types of designs that can be used, limiting creative freedom.
- **POTENTIAL QUALITY ISSUES**  
With some print on demand providers, the quality of printing can vary, and the process may not produce the same level of detail or consistency as other printing methods.
- **SHIPPING TIMES**  
Shipping individual items or small quantities can take longer than shipping bulk products, which can affect delivery times for customers.
- **LIMITED MARKET REACH**  
With print on demand, businesses may be limited in their ability to reach new markets or sell products in large quantities, as they would with traditional printing methods.



## 11.2 CHAPTER XI TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some advises for graphic design teachers to introduce [print on demand](#) in the curriculum

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- **START WITH AN OVERVIEW OF THE CONCEPT**  
Provide an introduction to print on demand and explain how it differs from traditional printing methods. Emphasize its eco-friendly aspect and its benefits in terms of cost and time-saving.
- **SHOW REAL-LIFE EXAMPLES**  
Provide students with examples of print on demand products, such as t-shirts, mugs, and other merchandise. Highlight the quality and versatility of print on demand products.
- **DISCUSS THE TECHNICAL ASPECTS**  
Explain the various printing technologies involved in print on demand, such as digital printing, screen printing, and heat transfer printing. Discuss the advantages and disadvantages of each method, as well as the materials and inks used.
- **COVER THE DESIGN ASPECTS**  
Highlight the importance of design in print on demand, such as choosing the right format, color profile, and resolution. Explain the design requirements and restrictions, such as file format, bleed, and trim.
- **PROVIDE HANDS-ON EXPERIENCE**  
Encourage students to create their own print on demand designs and have them printed through a print on demand platform. This will give them a chance to experience the process from start to finish and understand the importance of design and production.
- **USE CASE STUDIES**  
Show students how print on demand has been used by other graphic designers and businesses. This will give them an idea of the possibilities and opportunities that print on demand offers.
- **ENCOURAGE SUSTAINABILITY**  
Emphasize the importance of sustainable practices and materials in print on demand, such as using eco-friendly inks, paper stocks, and packaging materials. Encourage students to think about the environmental impact of their designs and production processes.



## CHAPTER XII

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### HOW TO SELECT THE MOST SUSTAINABLE PRINTING COMPANY

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**12.1.**  
Certifications and Methodology

**12.2.**  
Tips and Types  
for Graphic Design Teachers



## 12.1 CHAPTER XII CERTIFICATIONS AND METHODOLOGY

When selecting a printing company for graphic design projects, it is important to consider the company's environmental policies and their use of sustainable printing methods.

One way to do this is by looking for certifications such as FSC<sup>23</sup> (Forest Stewardship Council) or PEFC<sup>24</sup> (Programme for the Endorsement of Forest Certification) which indicate that the company uses responsibly sourced paper and materials. Additionally, it is important to consider the printing methods used by the company, such as digital printing or LED printing, which are more environmentally friendly than traditional methods. Another important aspect to consider is the company's energy consumption and waste management practices. A company that uses energy-efficient equipment and has a recycling programme in place is likely to have a lower environmental impact. Furthermore, it is essential to check the company's track record of compliance with environmental regulations and if they are part of any environmental initiative. To have a clear picture of the company's environmental performance, it is recommended to ask for detailed information on their environmental policies and certifications, and to visit the company's facility to check their environmental performance in practice.

### ROMANIA

**Some examples of companies in Romania that have implemented sustainable energy consumption and waste management practices include:**

- **PAPIRPRO**  
a recycling company that specializes in paper and cardboard recycling, reducing the environmental impact of paper production.
- **ECO-ROM AMBALAJE**<sup>25</sup>  
a packaging company that uses eco-friendly materials such as biodegradable plastics and recycled paper in their products, minimizing waste and pollution.
- **PRINTEC GROUP**<sup>26</sup>  
a printing company that uses energy-efficient equipment and sustainable printing techniques, such as digital printing and LED printing, to reduce their environmental impact.
- **GREEN ENERGY ROMANIA**  
a renewable energy company that offers green energy solutions such as solar and wind power, allowing companies to reduce their carbon footprint and choose a more sustainable energy supplier.
- **ENERGYPAL ROMANIA**<sup>27</sup>  
offers energy efficiency services, through which customers benefit from the most effective solutions to reduce building operating costs. The solutions and technologies used result in the reduction of the operating costs of the beneficiaries, which allows the financing of the solutions from the savings achieved.

### NOTE

<sup>23</sup>— [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/11630-Disboscamento-illegale-valutazione-delle-norme-dellUE-controllo-delladeguatezza-/F506597\\_it](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/11630-Disboscamento-illegale-valutazione-delle-norme-dellUE-controllo-delladeguatezza-/F506597_it)

<sup>24</sup>— <https://www.eea.europa.eu/data-and-maps/data-providers-and-partners/programme-for-the-endorsement-of>

<sup>25</sup>— <https://ecoromambalaje.ro/>

<sup>26</sup>— <https://www.printecgroup.com/>

<sup>27</sup>— <https://www.energypal.ro/servicii/offers>





## 12.1 CHAPTER XII CERTIFICATIONS AND METHODOLOGY

### ITALY

Examples of company's energy consumption and waste management practices in Italy include:

- **FELTRINELLI**<sup>28</sup>  
This Italian printing company uses 100% renewable energy sources and is committed to reducing its CO<sup>2</sup> emissions. They have also implemented a recycling program for paper and other materials used in the printing process.
- **GRAFICHE ANTIGA**<sup>29</sup>  
This company has implemented a number of sustainable practices such as the use of vegetable-based inks, recycling of paper and printing plates, and energy-efficient equipment.
- **CARTOTECNICA ROSSI**<sup>30</sup>  
This company has implemented a recycling program for paper and other materials used in the printing process and also uses energy-efficient equipment such as LED lights.
- **TIPOGRAFIA MODERNA**<sup>31</sup>  
This printing company has implemented a number of sustainable practices such as the use of vegetable-based inks, recycling of paper and printing plates, and energy-efficient equipment. They also offset their carbon footprint by investing in renewable energy projects.
- **GRAFICHE GM**<sup>32</sup>  
This company has implemented a recycling program for paper and other materials used in the printing process, uses energy-efficient equipment such as LED lights, and also uses water-based inks which are less harmful to the environment.

### NOTE

28— <https://www.lafeltrinelli.it/>

29— <https://www.graficheantiga.it/>

30— <https://www.cartotecnicarossi.it/>

31— <https://www.tipografia-moderna.com/>

32— <http://www.gmgrafica.com/>



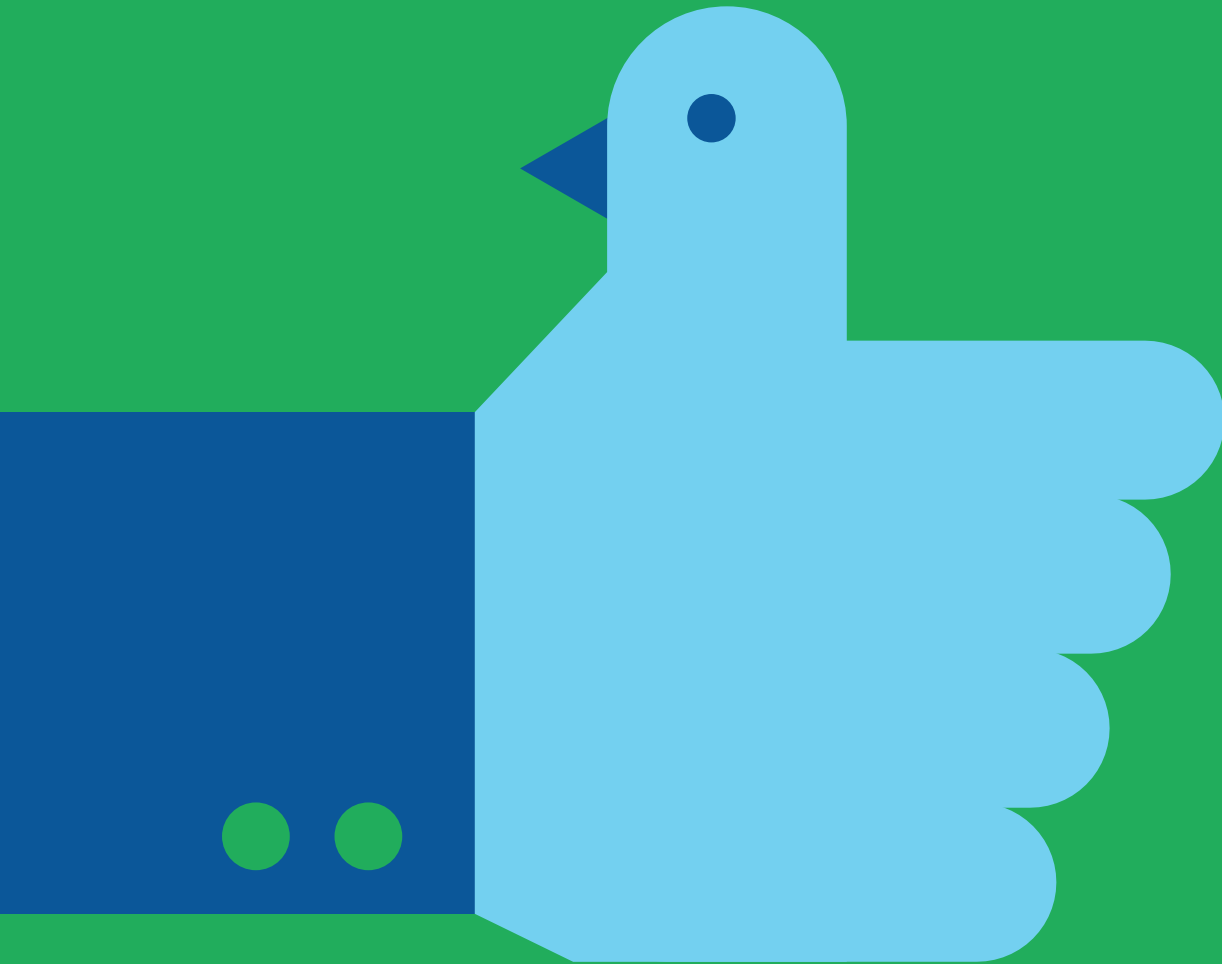
## 12.2 CHAPTER XII TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Here are some tips and types for graphic design teachers on how to [introduce the topic of selecting the most sustainable printing company in the curriculum](#)

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- **[DISCUSS THE IMPORTANCE OF SUSTAINABILITY IN GRAPHIC DESIGN](#)** and the impact of printing on the environment.
- **[EXPLAIN THE VARIOUS CERTIFICATIONS](#)** that indicate a printing company is environmentally responsible, such as the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC), and the Rainforest Alliance.
- **[DISCUSS THE DIFFERENT ENVIRONMENTAL POLICIES](#)** that printing companies may have in place, such as reducing carbon emissions, using recycled materials, and minimizing waste.
- **[DISCUSS THE USE OF ECO-FRIENDLY PRINTING METHODS](#)**, such as digital printing, vegetable-based inks, and water-based solvents.
- **[PROVIDE REAL-LIFE EXAMPLES OF SUSTAINABLE PRINTING COMPANIES](#)** and the projects they have completed, and discuss the challenges they have faced and how they have overcome them.
- **[PROVIDE HANDS-ON ACTIVITIES](#)** and assignments that allow students to research and compare different printing companies, evaluate their sustainability practices, and make recommendations for the most sustainable option for a specific project.
- **[ENCOURAGE STUDENTS TO CONSIDER SUSTAINABILITY AS AN INTEGRAL PART OF THEIR DESIGN PROCESS](#)**, from selecting the printing company to choosing materials and methods.



## CHAPTER XIII

### COMMUNICATION AND SPREADING

The knowledge of how to approach sustainable graphic design to others

#### 13.1.

Importance

#### 13.2.

Tips and Types  
for Graphic Design Teachers



## 13.1 CHAPTER XIII IMPORTANCE

Communication and spreading knowledge about sustainable graphic design is crucial in promoting and implementing eco-friendly practices in the industry.

Educating clients about sustainable options available to them can help them make more informed decisions about their design projects. Building awareness about the environmental impact of graphic design and the importance of sustainability can also help encourage more designers to adopt sustainable design practices.

### NOTE

33— <https://www.greendigitalcoalition.eu/join/>

34— <https://eeb.org/>

35— <https://www.eea.europa.eu/>

36— <https://www.edp-award.com/>

37— <https://epeeglobal.org/wp-content/uploads/2022/01/EPEE-Position-Paper-20211114-on-ENER-Lot-1-and-2.pdf>

One way to communicate and spread knowledge about sustainable graphic design is through professional development and training opportunities. By providing workshops and training sessions for graphic designers, educators can help equip them with the knowledge and skills needed to adopt sustainable practices in their work.

Another important aspect of communication and spreading knowledge about sustainable graphic design is through networking and collaboration. By connecting with other designers and industry experts, graphic designers can learn about best practices and stay up-to-date on the latest sustainable design trends. Additionally, collaborating with other designers can also help promote sustainable design practices within the industry. In the European Union, there have been various campaigns and activities aimed at communicating and spreading knowledge about sustainable graphic design across Europe.

### SOME INITIATIVES INCLUDE:

- **THE EUROPEAN COMMISSION'S "GREENING THE ICT SECTOR" INITIATIVE**<sup>33</sup>  
which aims to promote sustainable and environmentally friendly practices in the information and communication technology sector, including graphic design.
- **"GREEN GRAPHIC DESIGN" WORKSHOP SERIES**  
which was organized by the European Environmental Bureau<sup>34</sup> and aimed to educate graphic designers on the importance of sustainable design and the use of eco-friendly materials and practices.
- **THE EUROPEAN ENVIRONMENT AGENCY (EEA)**<sup>35</sup>  
The EEA is a European Union body that provides information and advice on the environment. They have been actively promoting sustainable graphic design through awareness-raising campaigns and educational materials.
- **ECOPRINT**  
An initiative run by the European Digital Press Association<sup>36</sup>, which promotes sustainable printing and the use of eco-friendly inks and solvents in graphic design.
- **EUROPEAN PRINT ENERGY EFFICIENCY (EPEE)**<sup>37</sup>  
A program run by the European Printing Industry that aims to increase energy efficiency in the printing industry and promote sustainable graphic design practices.

### IN CONCLUSION

communication and spreading knowledge about sustainable graphic design is essential to promoting eco-friendly practices in the graphic design industry. By educating clients, building awareness, and encouraging collaboration and networking, designers can contribute to a more sustainable future for the industry and the environment.



## 13.2 CHAPTER XIII TIPS AND TYPES FOR GRAPHIC DESIGN TEACHERS

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Teaching “[Communication and spreading the knowledge of how to approach sustainable graphic design to others](#)” in the graphic design curriculum requires a comprehensive approach that engages students in both theoretical and practical aspects of sustainable design.

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### HERE ARE A FEW TIPS AND TEACHING METHODS THAT CAN BE APPLIED:

- **[INCORPORATE SUSTAINABLE DESIGN PRINCIPLES](#)**  
Start by introducing the principles of sustainable design, such as reducing waste, using environmentally friendly materials and processes, and minimizing the impact on the environment.
- **[CASE STUDIES](#)**  
Use real-life examples and case studies to illustrate the importance of sustainable graphic design. Highlight successful campaigns and initiatives that have made a positive impact on the environment.
- **[GUEST LECTURES](#)**  
Invite experts and practitioners in sustainable graphic design to come and talk to students about their experiences and share their knowledge and insights.
- **[GROUP PROJECTS](#)**  
Encourage students to work in teams on projects that explore sustainable graphic design solutions for real-world challenges. This will provide students with hands-on experience in using sustainable design practices and communicating their ideas to others.
- **[ONLINE RESOURCES](#)**  
Utilize online resources and tools to supplement the curriculum and provide students with a deeper understanding of the topic. This can include articles, videos, and interactive educational games.
- **[DISCUSSIONS AND DEBATES](#)**  
Encourage students to engage in discussions and debates around the topic of sustainable graphic design. This will help to broaden their understanding and encourage critical thinking skills.

# CIRCLE



—MANUAL

CIRCULAR ECONOMY IN GRAPHIC DESIGN

## CHAPTER XIV

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**CONCLUSION**



## 14.1 CHAPTER XIV CONCLUSION

In conclusion, the manual aimed to provide a comprehensive guide on sustainable graphic design practices. We covered various aspects such as using eco-friendly materials, minimizing packaging, choosing sustainable printing techniques, using virtual meetings and presentations, optimizing the design process, and more.

**These practices not only benefit the environment, but also contribute to a more responsible and ethical approach to design.**

Graphic designers play a critical role in promoting sustainability and environmental awareness, and it is essential for them to adopt sustainable practices in their work. The manual provides practical tips and guidance to help designers make informed decisions and implement sustainable solutions in their projects.

Graphic design teachers also play a significant role in shaping the future of the design industry by introducing sustainable practices in their curriculum. By educating their students on the importance of sustainability and incorporating sustainable practices in their lessons, teachers can help create a new generation of responsible and environmentally conscious designers.

We encourage both graphic designers and teachers to adopt these sustainable practices and play their part in creating a more sustainable future for all.

**By incorporating sustainability into our daily design processes, we can create a positive impact on the environment and contribute to a more responsible and ethical design industry.**

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**CIRCLE**

Circular Economy in Graphic Design

**Project partners:**

**ROMANIA**



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