

Module 1-Copyright

Copyright in 3D Printing

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HEARTHANDS SOLUTIONS

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ID	Reference	Title
1	2020-1-UK01-KA201-078934	IPinSTEAM Proposal
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APPLICABLE DOCUMENTS

ID	Reference	Title
1		
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1. Copyright

1.1 Learning Outcomes

With this module, learners will learn about copyright and its importance. They will navigate Intellectual Property issues and learn to distinguish between rightful use and copyright infringement.

After completing this module, you will be able to:

- Understand the concepts of Copyright Law and Copyright Infringement
- Distinguish useful from non-useful objects
- Distinguish Fair/Private Use from Commercialisation
- Grasp the essence of Copyright Conditions and Copyright Registration process

Estimated seat time: 3 hours

1.2 Main Content

Please provide your content here. Include definitions, explanations, practical examples and case studies/success stories. The main content (not the whole document!!!) shall be around 10 A4 pages.

1.2.1 Terms and Definitions

IP Laws

- Are laws that exist to protect your Intellectual Property rights.

CAD

- Is a computer-aided design, a digital file that you can print into a physical object using a 3D printer.

Copyright

- Is the **legal right** that a creator holds over original work and how it is used, immediately after they create the original work.

- It is not obligatory to register a work with your local Copyright Office; however, if you do so, you get additional legal protection against unauthorized use or reproduction of your work.

Copyright Law

- Is the **law** protecting your legal rights over your original work and giving you the tools to enforce the copyright.

Copyrighted Materials

- Are the materials that are formally registered as original works created by you; they are protected by the Copyright Law.

Infringement

- In 3D printing, if someone scans and prints a copyrighted, original work on a 3D printer **without the creator's permission**, this may constitute copyright infringement.

Copyright Conditions

- Are the **requirements** for copyright protection: a) you must be the creator (author) of the work; b) the work must be original; c) the work must be tangible and must have required some skill or effort to be created.

Copyright Registration

- Is the **process** that you follow to register your work as copyrighted material at your local Copyright Office (e.g. EUIPO-European Union Intellectual Property Office)

Useful objects

- Are handy objects that can be used in everyday life.

Non-useful objects

- Are objects of no utilitarian function, such as works of art.

Fair/private use

- Is when you use a copyrighted object/material for no commercial purposes –that is, without exploitation intentions (typically, in the privacy of your own home).

Hobbyist

- Is anyone who prints objects in the privacy of their home just for fun and for **no commercial purposes**.

Commercialization

- Is when you bring new products or ideas into commerce and make them available on the market.

1.2.2 Theory behind the IP implementation

Intellectual Property (IP) laws protect the legal rights that derive from the creation of original work, including ownership and usage rights. With IP, an original work that has required time and effort to be created is protected against counterfeits and unauthorised usage. IP refers to four different concepts that apply to different qualities or properties of the work: copyright, design, pattern, and trademark.

The rapid progress of technological evolution gives rise to such advancements as 3D printing. With 3D printing, the average consumer can replicate digitised objects in the privacy of their home. With numerous implications of such unauthorised replicas, this kind of technology has been deemed *potentially disruptive* (Rideout, 2011, p. 161). Since 3D printing has become cheaper and more accessible to the average consumer, 3D printing enthusiasts and hobbyists eagerly seek to create and share designs for 3D objects (Rideout, 2011, p. 162). While the motivation here is entertainment and not profit, the fact that such activities are not controlled leaves room for dispute between creators/owners and non-paying consumers.

With 3D printing advancing “beyond printing solid objects to more complex objects, such as printed electronic parts and even human tissue,” traditional authorship protection has been challenged (Venable LLP, 2021). Subsequently, in many instances, 3D digital files were deemed as important as software in terms of legal protection under copyright law, thus giving justification for additional interpretations of authorship and copyright protection (Malaty & Rostama, 2017). This was mainly due to changes in manufacturing and the simplification of the process needed to counterfeit 3D products (Venable LLP, 2021). As a result, 3D printing raises additional concerns for IP rights and requires new approaches and IP strategies globally.

Official conventions have been signed with the scope to protect IP rights and their owners. In Europe, the *Berne Convention* defines the term copyright and its implications in ownership and usage rights as a right enjoyed by authors of “literary and artistic works,” including various forms of *literary, scientific and artistic* productions (Berne Convention, 1971, ar.2). As a legal right prone to a wide range of interpretations, copyright in 3D printing can be additionally protected, if deemed

necessary, by securing legal control over *3D CAD files*, or by *expanding intellectual property protection for 3D objects* (Rideout, 2011, p. 173, Olonen, 2019, p.20). Any file and/or object that is officially registered as created and owned by a specific entity (physical or legal) becomes ‘copyrighted material.’ As such, they are officially protected against any unauthorised use. Unauthorised use and/or reproduction constitute *copyright infringement* when works are officially registered (Bradshaw et al., 2010, p.20). Accordingly, any act of copying original work is potentially infringing, depending on the legal framework in place.

The U.S. lawmaking system allows for certain flexibility when using copyrighted material, by marking a clear distinction between “fair use” and commercialisation (Hugenholtz, 2013, p.26). This distinction is not as legally conclusive in the EU and its Member States and each member State delineates the prerequisites for assessing copying as infringement in their proper legal system. However, the *Directive on Copyright in the Digital Single Market* adopted in 2019 with the scope to “achieve a well-functioning marketplace for copyright” describes certain circumstances under which copyrighted works may be used (EUR-Lex, 2019). Based on this Directive, copyrighted works may be reproduced (partially) for *non-commercial* purposes, such as educational purposes, reviews, etc. To that end, secondary copyright licenses are adopted, like *Creative Commons* (CC BY 4.0, CCO), with the scope to expand the range of information that can be shared freely (Vollmer, 2019). Exceptions in copyright law and secondary copyright-licenses generally to things of benefit for the common good and are, therefore, ethically accepted.

As one of the IP rights, copyright protects ownership and usage. With 3D printing becoming increasingly popular and accessible among average consumers, learning about Copyright law and copyright infringement becomes of the essence. The boundaries between the Digital Single market promoted by capitalism, the individual consumer’s desires and capabilities, and the principle of freedom in consumption, can often be blurry, if not for such distinctions as useful and non-useful objects, original work and counterfeit.

1.2.3 Practical examples

Copyrighted works could be:

A book, a song, a play, a photograph, an instructional manual, a painting, a sculpture, a 3D cartoon, a CAD design, etc.

1.2.4 Case studies

1. Hasbro, Shapeways and My Little Pony fan art.

<https://www.shapeways.com/blog/archives/16759-hasbro-shapeways-enable-3d-printing-fan-art-with-superfanart.html>

With 3D printing being increasingly popular, big companies risk disappointing their audience if they do not offer a compromising solution for certain products or services. In this context, the global brand *Hasbro* has partnered with *Shapeways* in 2014, with the scope to share certain aspects of its intellectual property with their fans: while keeping control over their copyright, Hasbro has allowed “*My Little Pony* fans to freely create fan art with 3D printers” (The Myers LG, 2021).

2. “Cocojet” Hershey’s dark chocolate.

<https://www.wired.co.uk/article/cocojet-chocolate-3d-printer>

Hershey’s is one of the large corporations that have begun “integrating 3D printing into the licensing of their brands” with the scope to enable the *commercial printing* of their chocolate (Venable LLP, 2021). To that end, Hershey collaborated with *3D Systems* to create a food printer especially designed to print chocolate: the CocoJet 3D printer (Collins, 2015).

3. 3D-printed versions of a vital medical device.

<https://www.theverge.com/2020/3/17/21184308/coronavirus-italy-medical-3d-print-valves-treatments>

In Italy, volunteers used their 3D printer to print a medical device in times of crisis and save lives. Although their action was not authorised by the company providing the original design, it was deemed as a ‘fair use’ matter and did not cause an IP infringement suit (Chintalapoodi, 2021).

4. “Thingiverse:” A website offering an open-source model for sharing designs under Creative Commons licenses.

<https://www.thingiverse.com/>

“Websites like Thingiverse serve as a place for online communities of users to freely upload, improve upon, and virtually distribute objects anyone can make if they have access to a 3D printer” (Rideout, 2011, p. 164). In this way, users can download a CAD file and either further customize it to reach the desired result, or print out a copy of the original without worrying about liability.

1.3 Knowledge Assessment

Quiz-like assessment based on the main content. Please mark the correct answer with bold when required. Include 10 questions for your module. Increase gradually the level of difficulty.

Question 1 (multiple choice or true/false): What is Copyright?

[An idea concerning ownership 1] [**A legal right 2**] [An object 3]

Question 2 (multiple choice or true/false): What are Copyrighted Materials?

[**Formally registered original works 1**] [Innovative materials 2] [Original materials 3]

Question 3 (multiple choice or true/false): What are Copyright Conditions?

[**The requirements for Copyright Protection 1**] [The conditions under which you create a work of art 2] [Your legal rights when you create original work 3]

Question 4 (multiple answers correct): When are your intellectual property rights infringed?

[**When someone uses your copyrighted original work without your permission 1**] [**When someone uses imitations of your copyrighted original work for profit 2**] [When a hobbyist reproduces your work for fun and in the privacy of their home 3] [When someone uses useful objects that resemble your original work 4]

Question 5 (multiple answers correct): What does Copyright Infringement refer to?

[**Unauthorized reproduction of an original work 1**] [Unauthorized use of a useful object 2]
[Unauthorized critique of an original work 3] [**Unauthorized distribution of an original work**]

Question 6 (multiple answers correct): What kind of works does copyright protect?

[Novelty works 1] [Utilitarian objects 2] [**Literary works 3**] [**Artistic works 4**]

Question 7 (multiple answers correct): Based on the *Berne Convention*, what features of an object are protected?

[The materials used to create it 1] [The function 2] [**The shape 3**] [**The form 4**]

Question 8 (matching): Match the terms with their definitions.

Term 1 Copyright: The legal right that a creator holds over original work

Term 2 Copyright Registration: The process that you follow to register your work as copyrighted material at your local Copyright Office.

Term 3 Infringement: The unauthorised reproduction/distribution/sale of original work.

Term 4 Copyrighted materials: Materials that are formally registered as original works

Term 5 Hobby: Printing objects in the privacy of one's home just for fun, with no commercial purposes.

Question 9 (matching): Match the concepts with their explanations.

Concept 1 Fair use: The use of a copyrighted object/material for no commercial purposes.

Concept 2 Usefulness of an object: The utility of an object

Concept 3 Artistic creation: A creation with aesthetic value but no utility.

Concept 4 Authorship: The state of being the creator of original work.

Concept 5 Ownership: The state of owning IP rights for original work.

Question 10 (matching): Match the problems with their solutions.

Problem 1 I am alone at home and I am printing an artist's work on my 3D printer. Is this copyright infringement? : Solution Not if you only do this for fun and you do not sell the reproduced material in the market.

Problem 2 A 3D designer refuses to share his copyrighted material with me. Do I have the right to sue him? : No, registered material only belongs to its owner/creator.

Problem 3 I have created an original work but have not yet registered it at my local Copyright Office. Can I introduce it to the market and begin selling it? : Solution Yes, this is your legal right. However, unregistered material is less protected by the law and -therefore- facilitates the work of counterfeiters.

Problem 4 Can I copy a 3D registered work to study it privately? : Solution Yes, you can.

Problem 5 Are hobbyists allowed to sell the items that they reproduce? : Solution No, this is copyright infringement.

1.4 Skills Assessment

Assign an exercise that promotes problem-solving and critical thinking related to the actual implementation of Intellectual Property in STEAM subjects.

A person in your background is disabled. Are you allowed to make a copy of a copyrighted work in a way that this becomes more accessible to the disabled person? Does this constitute copyright infringement? Or not?

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