

# Module 1 - Copyright

## Lesson Plan in 3D Printing

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HEARTHANDS SOLUTIONS

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## REVISION HISTORY

Version	Date	Author	Description	Action	Pages
1.0	20/01/2021	HESO	Creation	C	TBS

(\*) Action: C = Creation, I = Insert, U = Update, R = Replace, D = Delete

## REFERENCED DOCUMENTS

ID	Reference	Title
1	2020-1-UK01-KA201-078934	IPinSTEAM Proposal
2		

## APPLICABLE DOCUMENTS

ID	Reference	Title
1		
2		

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# 1. Copyright

## 1.1 General Information

Background, needs analysis, etc.

Rapid technological advancements bring new forms of products and new applications to the average consumer's reach and, by extension, to the reach of children. As a result, STEAM education needs to provide the tools to understand and utilise all available resources concerning ethical and legal practices. In this context, students need to learn about Intellectual Property rights, so much so for the protection of their proper creative works and their future in technologically advanced environments, as for their appreciation and respect for other people's works. In this module, students will learn the basics of the concept of copyright.

### 1.1.1 Brief Description

Give a short description of the lesson plan or educational activity

This educational activity will start by familiarizing students with the concept of copyright. Upon understanding ownership of original work, students will learn about legal rights and copyright infringement. The theoretical framework will be followed by practical examples that will initiate productive dialogue, analysis, and, ultimately, conclusive remarks.

### 1.1.2 Learning Objectives – Intellectual Property in STEAM topics

Write here the learning objectives of this lesson plan or educational activity. Do not forget to mention the main IP topics it is related to.

This educational activity is related to copyright and its implementation in 3D printing. The learning objectives transcend the mere definition of copyright: students will be advised to learn about copyright laws, copyright infringement, and such concepts as fair use and the distinction between hobbies and commercialization.

### 1.1.3 Links to curriculum

This educational activity will encourage children to explore and question contemporary technological advancements and applications with a specific interest in 3D printing. It promotes **cognitive** learning (thinking) and **affective** learning (social/emotional) and is linked to:

- Science
- Technology
- Engineering
- Arts
- Mathematics

“Otto DIY build your own robot”

<https://www.thingiverse.com/thing:1568652>

The *Thingiverse* platform offers educational tools to help students understand how they can download a CAD file and further customise it or print out a copy of the original. In this example, students are presented with all the necessary steps to print their own robot!

“A Comic Introduction to Intellectual Property”

<https://www.slideshare.net/gderasse/a-comic-introduction-to-intellectual-property>

This is a *Slideshare* that presents briefly and clearly the basics of intellectual property in pictures: *what is IP, why we need it*, etc.

“Comics on Intellectual Property”

[https://www.ipd.gov.hk/eng/promotion\\_edu/educational\\_corner/comics/index.htm](https://www.ipd.gov.hk/eng/promotion_edu/educational_corner/comics/index.htm)

Cute and funny scripts to help students learn about IP rights, understand their importance in everyday life and build up awareness per IP protection.

WIPO “What is Copyright? A Cartoon Introduction”

<https://www.youtube.com/watch?v=eEB5MYcj-Ns>

Animated version of the *WIPO* Copyright Comic Book

Intellectual Property for Kids, Ep.3: What is Copyright?

<https://www.youtube.com/watch?v=hT41-IKVNCY&t=1s>

### 1.1.4 Duration

Give an estimate of how much time (in hours) is needed to complete this lesson plan e.g. in classroom of 20-25 students

2 hours

### 1.1.5 Extra materials required

List here all materials required (per student or per classroom) for the lesson plan or educational activity.

- Internet-connected computers: 1 per 5 students (optional)
- Beamer or digiboard to project materials.
- Online tool to help you display instructions (such as <https://classroomscreen.com/> with a free version available)
- Productivity and presentation tools like Microsoft Office and Google G Suite for Education.
- Digital creation tools

## 1.2 Step-by-step instructions

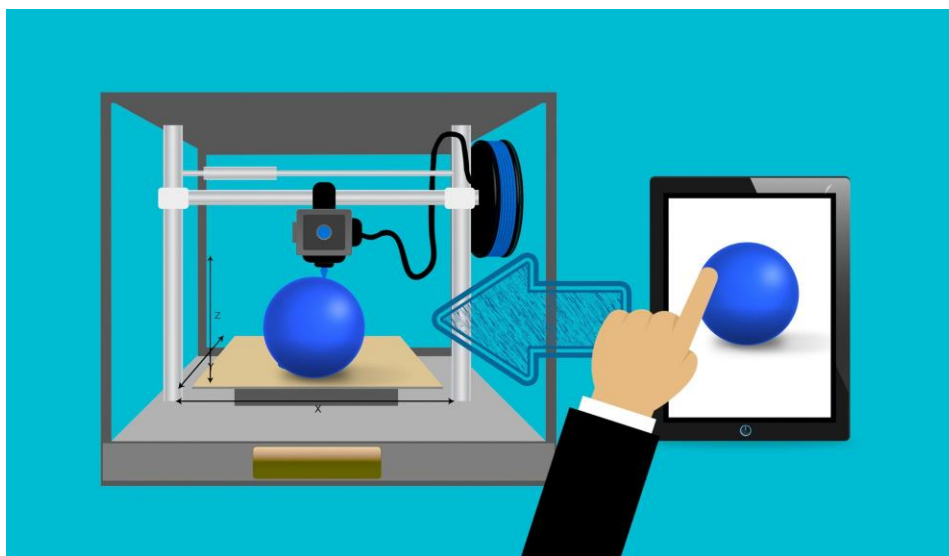


Image 1: 3D printer

Source: pixabay.com

This lesson is about **copyright** and its implementation in **3D printing**. The first phase will introduce the **theoretical framework** of **Intellectual Property** notions and rights. The teacher will ask questions and advise students to find the answers in groups of five (please allow time for inter-group discussions). When all questions are answered, they will be discussed in the classroom based on specific cases. Projected material during the whole activity will help students visualise the topic, all the while being entertained by fun comics and slides.

### 1.2.1 Introduction or orientation

Students will be encouraged to

- express their proper ideas and/or prior knowledge regarding intellectual property
- discuss the concept of original work
- distinguish between different forms of work –literary, artistic, etc.
- learn the difference between ideas and tangible objects

Projected materials (like comics on IP presented in the *Appendix*) will serve as initiators of discussion.

For instance:

- When given the following comic strip, students will be asked to express their comments and think of examples of IP:

[https://www.ipd.gov.hk/eng/promotion\\_edu/educational\\_corner/comics/image/01.htm](https://www.ipd.gov.hk/eng/promotion_edu/educational_corner/comics/image/01.htm)

- Next, when given the following comic strip, students will be introduced to the idea of limitations and/or requirements for IP protection:

[https://www.ipd.gov.hk/eng/promotion\\_edu/educational\\_corner/comics/image/02.htm](https://www.ipd.gov.hk/eng/promotion_edu/educational_corner/comics/image/02.htm)

Upon completion of inter-group discussions around the distinction between an **idea** and a **tangible creation**, the teacher will introduce the 4 IP concepts: Copyright, Design, Patents, Trademarks.

NOTE: Since this module is prepared for STEAM curricula and focuses on 3D printing, the teacher is required to use suitable examples and images to help students visualise 3D printing applications.



Image 2: astronaut  
Source: pixabay.com

### 1.2.2 Preparation or conceptualization

1) Students will be presented with symbols relating to copyright (like the following) and will be asked to interpret their meaning:



Image 3: icons/ Image 4: copyright  
Source: pixabay.com





Image 5: copyright-free/ Image 6: free  
Source: pixabay.com

Upon finishing examining prior knowledge, the teacher will

- explain the **definition of copyright**
- present the concept of **copyright laws**
- define the concept of **copyright infringement and its implications**
- explain **copyright conditions**
- explain the process of **copyright registration**
- distinguish between **hobbies** and **commercialization**

The teacher may draw upon open-source existing literature to clarify and better communicate the idea of intellectual property, the IP concepts, and the implementation of copyright in particular: see **References**.

2) By navigating open-source children websites, like <http://www.copyrightkids.org/>, the students will see more copyright examples and find answers for several additional questions.

### 1.2.3 Investigation

1) Students will be presented with **case studies**, like:

- 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>

- Thingiverse

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

In groups of 5, students will be asked to discuss **how copyright applies to 3D printing**, based on the case studies.

Next, they will be asked to write down a list of requirements/conditions for 3D printing **without infringing copyright** (e.g. for fun, at home, etc.)

2) Students will be encouraged to participate in a **debate** about **copyright infringement**.

Step 1: role-playing scenario: Student A has designed a 3D astronaut and student B recreates the same astronaut without A's permission.

Step 2: discuss:

- if A has the right to be upset,
- if B had the right to counterfeit the astronaut,
- if B has the right to sell the astronaut to student C,  
and so on!

3) Students will be asked to analyse any relative misconceptions either existing prior to this lesson or emerging from difficulty in understanding the concept of copyright.

- Is copyright an idea or a legal right?
- Does infringement create grounds for legal dispute?
- Is an idea protected?

And so on!

### 1.2.4 Conclusion

Wrapping up the key topics revolving around copyright and its application in 3D printing, the teacher may display:

- A Slideshare with the basics of IP:

<https://www.slideshare.net/gderasse/a-comic-introduction-to-intellectual-property>

- Cartoon videos on copyright, like *WIPO*:

<https://www.youtube.com/watch?v=eEB5MYcj-Ns>

Next, the students will be asked to summarise the basics of IP and copyright in particular, as well as reflect on possible disruptions accompanying the rapid advancements of technology.

## 1.3 Key questions for knowledge testing

Question 1: What is copyright?

[an original work of an artist 1] [the function of an object 2] [**a legal right 3**]

Question 2: What is copyright infringement?

[the registration of your original work as copyrighted material 1] [**the unauthorised use/reproduction/distribution of original work 2**] [printing objects for fun 3]

Question 3: What is authorship?

[**the state of being the creator of original work 1**] [the utility of an object 2] [the commercial purposes when reproducing original work 3]

Question 4: What are copyrighted materials?

[the materials you use to make an original work 1] [the aesthetic value of your work 2] [**the materials that are formally registered as original works 3**]

Question 5: When is 3D printing considered a hobby?

[when you print an object to sell it 1] [**when you print something for fun, in the privacy of your home 2**] [when you print useful objects 3]

## 2. Additional resources

### 2.1 Further reading

<https://www.wipo.int/publications/en/details.jsp?id=66&plang=EN> WIPO Comics

### 2.2 Appendix

“Otto DIY build your own robot”

<https://www.thingiverse.com/thing:1568652>

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## References

Ackerman, P. (2021). *The 4 main types of intellectual property and related costs*. Intellectual Property Management Software. Retrieved October 15, 2021, from <https://www.innovation-asset.com/blog/the-4-main-types-of-intellectual-property-and-related-costs>.

- Berne Convention. (1971). *Berne Convention for the Protection of Literary and Artistic Works*. Oxford University Press. Retrieved October 23, 2021, from <https://global.oup.com/booksites/content/9780198259466/15550001>.
- Bradshaw, S., Bowyer, A., & Haufe, P. (2010). The Intellectual Property Implications of Low-cost 3D Printing. *ScriptEd*, 7(1), 5–31. <https://doi.org/10.2966/scrip.070110.5>
- Chintalapoodi, P. (2021). *3D printing implications on existing IP Laws*. Lexology. Retrieved October 17, 2021, from <https://www.lexology.com/library/detail.aspx?g=ed791486-359a-4e6b-8400-6826ae142298>.
- Collins, K. (2015). *You can now 3D print complex chocolate structures*. WIRED UK. Retrieved October 18, 2021, from <https://www.wired.co.uk/article/cocojet-chocolate-3d-printer>.
- EUR-Lex. (2019). *Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market*. EUR-Lex: Access to European Law. Retrieved October 18, 2021, from <https://eur-lex.europa.eu/eli/dir/2019/790/oj>.
- Hugenholtz, P. B. (2013). Fair use in Europe. *Communications of the ACM*, 56(5), 26–28. <https://doi.org/10.1145/2447976.2447985>
- Malaty, E., & Rostama, G. (2021). *3D printing and IP law*. 3D printing and IP Law. Retrieved October 15, 2021, from [https://www.wipo.int/wipo\\_magazine/en/2017/01/article\\_0006.html](https://www.wipo.int/wipo_magazine/en/2017/01/article_0006.html).
- Olonen, K. (2019). *3D Printing and its Implications on Copyrights from a European Union - United States Perspective* (thesis). <https://digikogu.taltech.ee>, Tallinn.
- Rideout, B. (2011). Printing the Impossible Triangle: The Copyright Implications of Three-Dimensional Printing. *The Journal of Business, Entrepreneurship & the Law. Pepperdine University*, 5(1), 161–177. <https://doi.org/https://digitalcommons.pepperdine.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1074&context=jbel>
- The Myers LG. (2021). *How 3D printing challenges trademark, copyright, and patents*. Intellectual Property, Corporate & Business Litigation Attorneys. Retrieved October 18, 2021, from <https://www.themyerslg.com/blog/2020/04/how-3d-printing-challenges-trademark-copyright-and-patents/>.
- Venable LLP. (2021). *IP strategies for the rise of 3D printing: Insights*. Venable LLP. Retrieved October 16, 2021, from <https://www.venable.com/insights/publications/2015/04/ip-strategies-for-the-rise-of-3d-printing>.
- Vollmer, T. (2020). *European Commission adopts CC by and CC0 for sharing information*. Creative Commons. Retrieved October 22, 2021, from

<https://creativecommons.org/2019/04/02/european-commission-adopts-cc-by-and-cc0-for-sharing-information/>.