Science Communication in 5 P

course integrated in the SmartArt project

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Science Communication in 5 P

"Everything should be made as simple aspossible, but not simpler" - Einstein

General objectives

The online course "How to Communicate Science in 5P" aims to promote in the educational community of UMinho, the awareness of the importance of science communication, in a society increasingly dependent on science and technology, and arises from the need to provide our students with the most varied digital and communication skills, while promoting active and collaborative learning among peers. It is also intended to promote the interaction, involvement, participation and collaboration of students, in the development of contents in the inverted classroom model, through the elaboration of short videos - pitches with the explanation in a simple and dynamic way, of complex concepts. These concepts are related to the learning objectives of the most varied CUs, also contributing to the improvement and quality of learning.

Workload:

Each Module - 1 hour of study and 1 to 2 hours of collaborative work.

MODULE 0 | Introduction to Science Communication in 5P

Recently there has been an increase in the Society's interest in basic concepts of Science, namely Bioengineering and Biotechnology. in addition to the need for knowledge about advances in Science and Biotechnology. The current pandemic conjecture has also led to the need for a very rapid adaptation of traditional and face-to-face teaching to the online model and more recently to the hybrid model, where capturing the attention of listeners, whether students or "stakeholders", was and is a constant challenge.

Methodology for Science Communication in 5 steps

Module 0, the introductory module of the How to Communicate Science in 5 P course, aims to present a methodology for the development of a science communication resource, be it video, animation, infographic or informative text.

We propose a methodology in five steps (5 P) of active co-construction of the respective multimodal science communication, using different digital tools:

Vídeo de apresentação

introdu%C3%A7%C3%A3o-en.mp4
1:56 video
CEH.ILCH.UMINHO.PT

CHALLENGE

● See an example of a Science Communication video ("bacterial infection") and make a critical analysis;

● Identify the target audience of this video;

● Did you identify a term that you are not familiar with? Could this term be replaced by another? Which one?

Challenge | MODULE 0 | Introduction to Science Communication in 5P

See an example of a Science Communication video ("bacterial infection") and make a critical analysis link for video https://bit.ly/2WAREWH
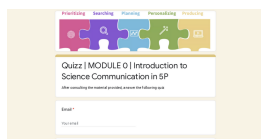
GOOGLE DOCS

Quizz

Quizz | MODULE 0 | Introduction to Science Communication in 5P

After consulting the material provided, answer the following quiz

GOOGLE DOCS

Resources: Bibliography, websites, computer applications

Gascoigne. T., et al . (eds) (2020). Communicating Science. A Global Perspective. Australia:
ANU Press. DOI: 10.22459/CS.2020
https://bit.ly/2VjUvCu
M Mota, CM Sá, C Guerra - Revista Lusófona de Educação (2021) A banda desenhada na
comunicação e educação em ciência: uma revisão sistemática da literatura . Revista
Lusófona de Educação . v. 51 n. 51
https://bit.ly/3lfnNNT
Ferreira, M. F., Silva-Lopes, B., Granado, A., Freitas, H., & Loureiro, J. (2021). Audio-visual
tools in science communication: the video abstract in Ecology and Environmental Sciences.
Frontiers in Communication , 6 , 1-12. [596248].
https://doi.org/10.3389/fcomm.2021.596248
sites:
http://scicom.pt/
https://padlet.com/docenciamaisimpacto/85sgzpzp4wjd7rj3
https://www.publico.pt/comunicacao-de-ciencia

MODULE 1 | PRIORIZE

Adapt the contentes to the target audience

Science communication has been searching for the best strategies to achieve its goals. Thus, different concepts focused on different audiences have emerged. The need to adapt this communication to the target audience is of crucial importance if we want to achieve success in transmitting a message.

Prioritizing

Objectives

This first module aims to alert to the importance of adapting the content and language of communication according to the intended target audience and the scientific content to be communicated. It is intended to identify different types of audiences and select the most effective strategies for capturing our target audience.

Presentation video

priorizar-en-1.mp4
1:50 video
CEH.ILCH.UMINHO.PT

Challenge

Choose a scientific concept and explain it to different audiences (your explanation cannot be longer than 50 words):

● children from 5 to 8 years old;
● young people from 16 to 18 years old;
● non-specialist adults;

Challenge | MODULE 1 | PRIORIZE
Choose a scientific concept and explain it to different audiences (your explanation cannot be longer than 50 words):

FORMS.GLE

Quizz

Quizz | MODULE 1 | PRIORIZE
After consulting the material provided, answer the following quizz

GOOGLE DOCS

Resources: Bibliography, websites, computer applications

M. L. Valença (2015). Comunicação Pública de Ciência – Um Guia para Cientistas . Tese de
Mestrado ITQB/UNL
Oliveira. R. Percepção e política na divulgação científica: em busca de um público-alvo.
ClimaCom [online], Campinas , ano. 4, n. 9, Ago. 2017 . Available from:
http://climacom.mudancasclimaticas.net.br/?p=7288

MODULE 2 | SEARCH

Defining the subject of the communication and the research criteria

When we propose to communicate about a scientific topic or concept, we must deepen our knowledge on this subject. The bibliographical research should be limited to the chosen topic and the sources of information must be reliable. Only with in-depth knowledge of a subject can we succeed in conveying a message.


Searching
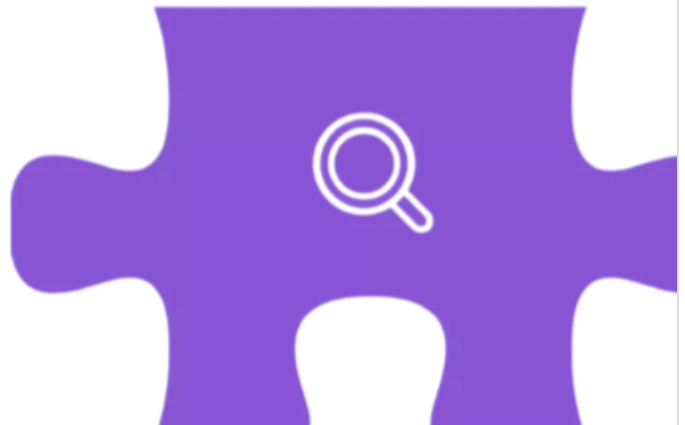
Objective

This second module intends for trainees to reflect on what scientific theme/concept they want to communicate. To this end, it is important that they: (i) recognize the importance of good bibliographic research, (ii) recognize the different search engines and sources of bibliographic research and (iii) reflect on issues related to scientific and academic integrity and ownership intellectual.

RESEARCHING WHAT?		RESEARCHING WHERE?
Finding keywords and search terms Keywords	>	Choose where to look for the information you want > Resources

Presentation video
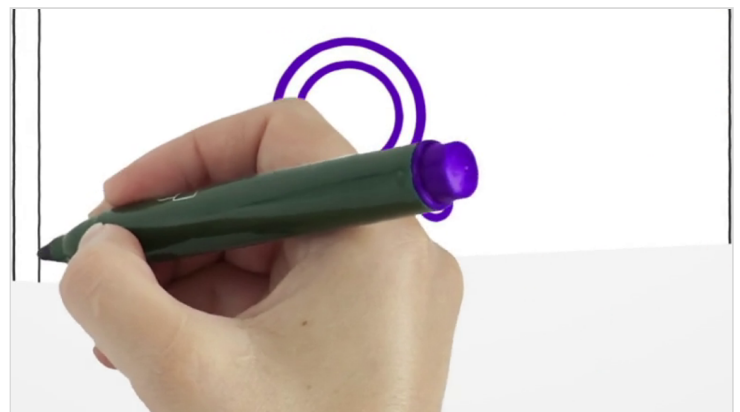
pesquisar-en.mp4
1:11 video
CEH.ILCH.UMINHO.PT

Challenge

● Choose a scientific concept and gather some scientific information about that concept.
● Think of a question whose answer is scientific knowledge about the concept.
● Think about what message should be conveyed about the chosen concept and how they would like to convey that

message.

Quizz

Resources: Bibliography, websites, computer applications

There are several scientific repositories where you can search for reliable:
sources: Google Scholar: https://scholar.google.com
Elsevier: https://www.elsevier.com/
Microsoft Academic: https://academic.microsoft.com/ Google
Books: https://books.google.com/
Open Library: https://openlibrary.org/

MODULE 3 | PLANNING

Select and organize the information from the documentary research

The mind map consists of a diagram, usually in the form of a tree, which facilitates the conceptual representation of the contents and their hierarchical relationships (Buzan & Buzan, 1993). This visual representation, on the one hand, enables the schematic organization of readings and, on the other, constitutes in itself as an idea-generating principle and guide in the organization of thinking.
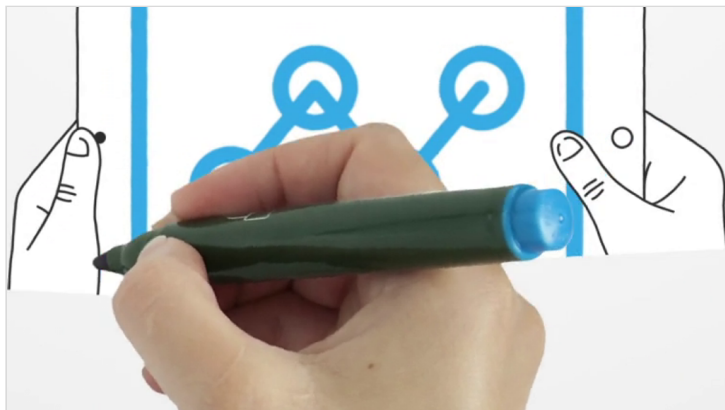
Objective

In this third module, students are invited to prepare a mental map in order to systematize the main ideas resulting from the previous stage, mobilizing map creation tools. Next, we briefly present the basic mind mapping technique that we propose to help students actively process the information collected in the previous step.

TO PLAN WHAT ?	TO PLAN HOW ?
Finding the key words and relating them to	Designing a mind map.

Presentation video

Storytelling is a media production in which the multimedia potential is used to tell short stories of 3 to 5 minutes, combining the word, narration, still image, music or sound effect. The process requires mastery of research, writing, information selection and organisation, image recording, audio recording and editing of the whole set (Lencastre, Bento, & Magalhães, 2016), which can be done with a smartphone or tablet, as they are true multimedia tools.

Objectives

Module 4 aims to present the concept of storytelling as a process for creating a multimodal narrative related to a science communication resource, using digital tools (such as a smartphone or a tablet).

Presentation video

In the "game" theme, the terms gamification and game-based learning are sometimes used synonymously. However, there are distinct differences between the two concepts. While game-based learning integrates (even) games into the process for the student to work on a specific skill or achieve a learning objective, gamification uses game elements in non-play activities to motivate and engage students in problem solving (Lencastre, Bento, İlin, & Milios, 2021). In essence, the learning experience itself is transformed into an educational game using a narrative, missions, goals, point systems, levels, and rewards. These game elements are all integrated to help the student achieve learning goals.

planificar-en-1.mp4
1:12 video

CEH.ILCH.UMINHO.PT

Challenge

● Select three scientific articles on the web that are related to the concept to be addressed;
● Initiate a brainstorming stage with group colleagues to extract the most relevant ideas;
● Organize these ideas into a mind map using the technique presented.

link to forms: https://forms.gle/trEhVUkqFdMYiVM97

trEhVUkqFdMYiVM97

FORMS.GLE

Quizz

Quizz | MÓDULO 3 | PLANIFICAR
Após consultar o material fornecido, responda ao seguinte quizz

GOOGLE DOCS

Resources: Bibliography, websites, computer applications

Buzan, T & Buzan, B. (1993). *The Mind Map Book*. London, England: BBC Books.

Tools for mind mapping:
GitMind: https://gitmind.com/ Coogle: https://coggle.it/
MindMup: https://www.mindmup.com/

MODULE 4 | PERSONALIZE

Developing a narrative using storytelling

personalizar-en-1.mp4
2:22 video
CEH.ILCH.UMINHO.PT

Challenge 1

● Choose a scientific concept and gather some scientific information about that concept.
● Think of a narrative to approach the concept. Work the narrative in the game's logic, with missions, goals, levels, point systems and rewards.
● Think of a set of 3 tasks to fulfill this narrative.
● Define 3 gamification elements that can be used to involve the student in the tasks.

Challenge | MODULE 4 | PERSONALIZE

GOOGLE DOCS

Quizz 1

Quizz | MODULE 4 | PERSONALIZE
After consulting the material provided, answer the following quizz

GOOGLE DOCS

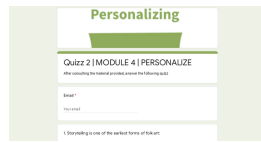# Resources: Bibliography, websites, computer applications

●   Lencastre, J. A., Bento, M., İlin, G., & Milios, P. (2021). Starting the Game: an introduction to Gamification. In José Alberto Lencastre et al. (eds), Gaming in Action, (pp. 5-14). Istanbul: ÖzKaracan.
Please use this identifier to cite or link to this item:
http://hdl.handle.net/1822/73539

●   Lencastre, J. A., Spânu, P., İlin, G. Milios, P., & Bento, M. (2021). Gaming in Action.Istanbul: ÖzKaracan.
Please use this identifier to cite or link to this item:
http://hdl.handle.net/1822/73540

●   İlin, G., & Lencastre, J. A. (2021). A Brief Surf on the Net for Gamification Research. In José Alberto Lencastre et al. (Des), Gaming in Action, (pp. 15-33). Istanbul: ÖzKaracan.
●   Please use this identifier to cite or link to this item:
http://hdl.handle.net/1822/73541

●   Barradas, R., & Lencastre, J. A. (2021). Gamification and game-based learning: strategies to promote positive competitiveness in the teaching and learning processes. In José Alberto Lencastre et al. (eds), Gaming in Action, (pp. 51-75). Istanbul: ÖzKaracan.
●   Please use this identifier to cite or link to this item:
http://hdl.handle.net/1822/73542
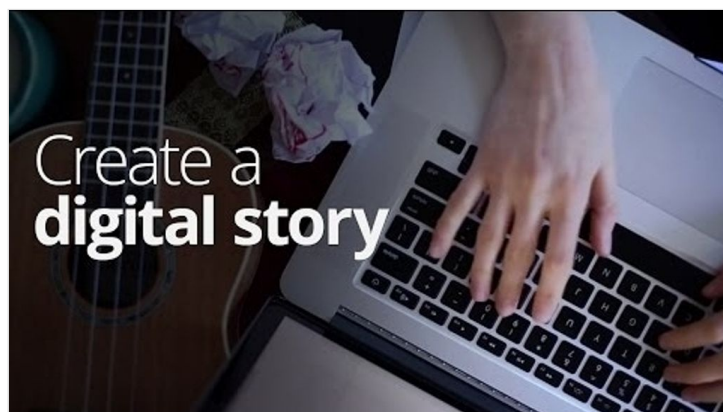
Create a digital story
by WeVideo
YOUTUBE

Challenge 2

● View storytelling videos.
● Design a multimodal narrative relating to a science communication resource.
● Create digital storytelling using digital tools (such as a smartphone or tablet).
● Publish the storytelling on the online platform.

link to forms
https://forms.gle/xhdrGrvmNGQN4uLr5

Google Forms: Sign-in
Access Google Forms with a personal Google account or Google Workspace account (for business use).

GOOGLE DOCS

Quizz 2

to several logistical aspects (avoid scenarios with windows or strong lighting from behind, a noisy place, etc.). If opting for an animated video, students need to explore the features available in animated videos.
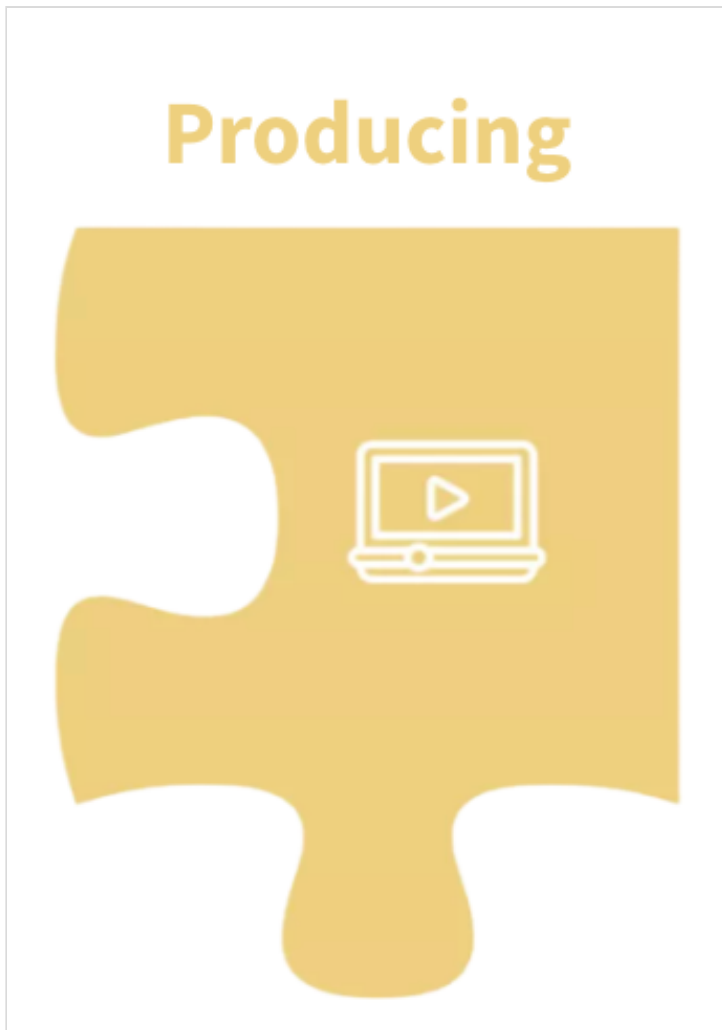
Resources: Bibliography, websites, computer applications

Lencastre, J. A., Bento, M., & Magalhães, C. (2016). Mobile Learning: potencial de inovação pedagógica. In Tânia Maria Hetkowski & Maria Altina Ramos (orgs.), Tecnologias e processos inovadores na educação (pp. 159-176). Curitiba: Editora CRV.

MODULE 5 | PRODUCING

Creation of a multimodal Science Communication output

This module aims at the creation of the audiovisual pitch using both filming (with the smartphone) and animated video tools.

Presentation video

produzir-en-1.mp4
1:12 video
CEH.ILCH.UMINHO.PT

Gamification and the Future of Education
by World Government Summit
YOUTUBE

Challenge

● Convert the first two scenes of your storyboard into an animated image;
● Record and edit the audio referring to these two scenes using an audio editor;
● Import and synchronize the audio with the animated images created in the initial stage;

link to forms:
https://forms.gle/iPoY2EhH8C2HVZWk9

iPoY2EhH8C2HVZWk9

FORMS.GLE

Objectives

This module aims to provide technical recommendations and digital tools for creating a pitch in audiovisual format. If they intend to use a cell phone to film, students need to pay attention

Quizz

Quizz | MODULE 5 | PRODUCING
After consulting the material provided, answer the following quiz

GOOGLE DOCS

Resources: Bibliography, websites, computer applications

Animated video creation tools

- Animoto : https://animoto.com/
- Powntoon : https://www.powtoon.com/
- Moovly : https://www.moovly.com/

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