BRAIN @ WORK

INFORMATION COMPETENCE AS BOOSTER
FOR PROSPECTIVE SCIENTISTS

2022

LEARNING UNITS

IL FOR STEM
TRAINING MODULES

Examples and strategies
to develop learning units in
problem-based learning environments

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Glossary

IP	**Intellectual Property**
PBL	Problem Based Learning
STEM	Science, Technology, Engineering and Mathematics
ToT	Training of trainers

Introduction

The present work has been realised as one of the intellectual outputs of the project Brain@Work, co-funded by the Erasmus+ Programme of the European Union.

The general aim of the project, which took place in the period November 2019 – June 2022, is to deepen the knowledge on how Information Literacy is applied to STEM disciplines in Europe and, consequently, to improve the educational offer of the organisations participating in the project through the creation of a modular set of innovative learning units for researchers and students, current and future workers in technical-scientific sectors.

Within the context of the project, this publication addressed to trainers has the aim of providing guidance and practical examples for the ones who want to use the proposed methodology and exploit the model through the production of other learning units.

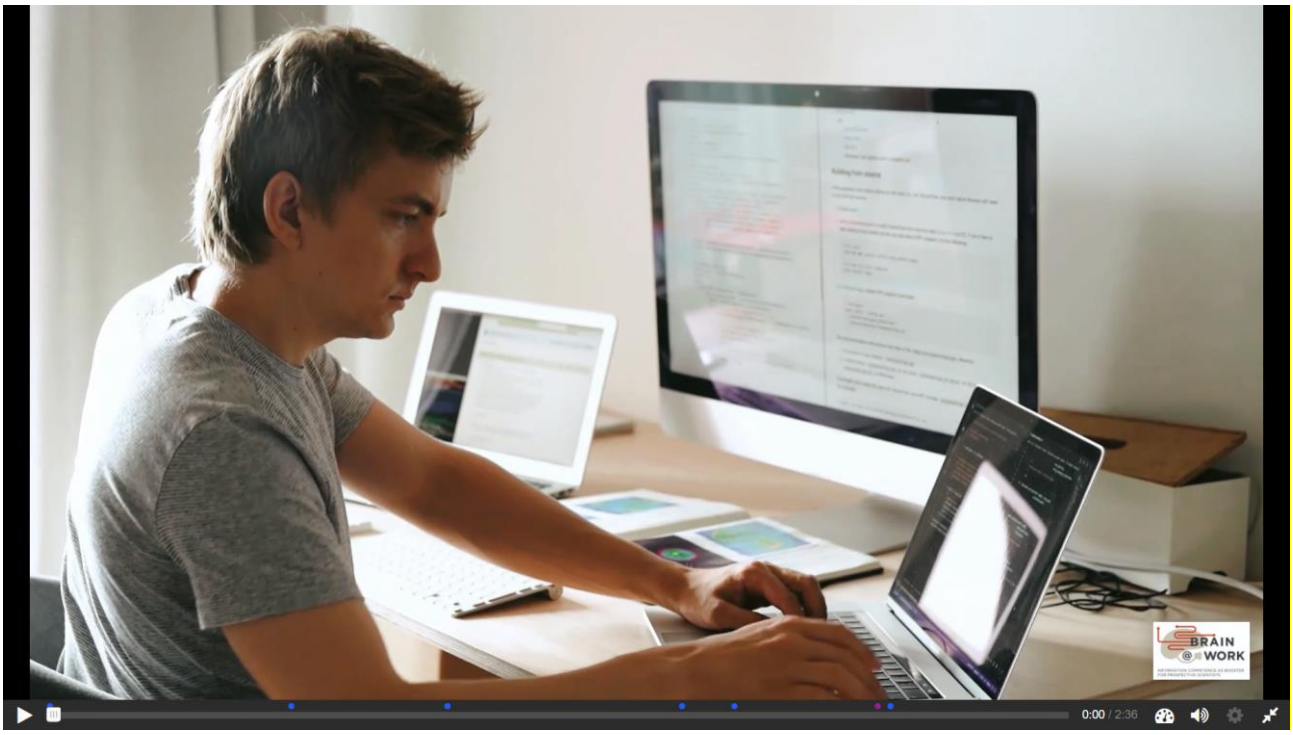


Fig. 1 A scene from the interactive video used to pose the problem during the course "How to choose scientific journals. Find, evaluate and select it"

Chapter 1: Re-usability through standardisation and customisation of Learning Units

According to the EU policy the BRAIN@WORK project adopted technological solutions compliant with the following statements:

A. learning management system and related add-ons and plug-ins must be distributed in OS licence
B. the educational resources and moreover all the resources available to learners must be free from DRM (digital rights management) restrictions and distributed as OER or Creative Commons.

The statement A is intended to warrant the possibility to modify the learning environment and customise it according to different needs.

The statement B means that all the content could be reused freely and without restrictions or constraints, except for the basic attribution to authors or owners.

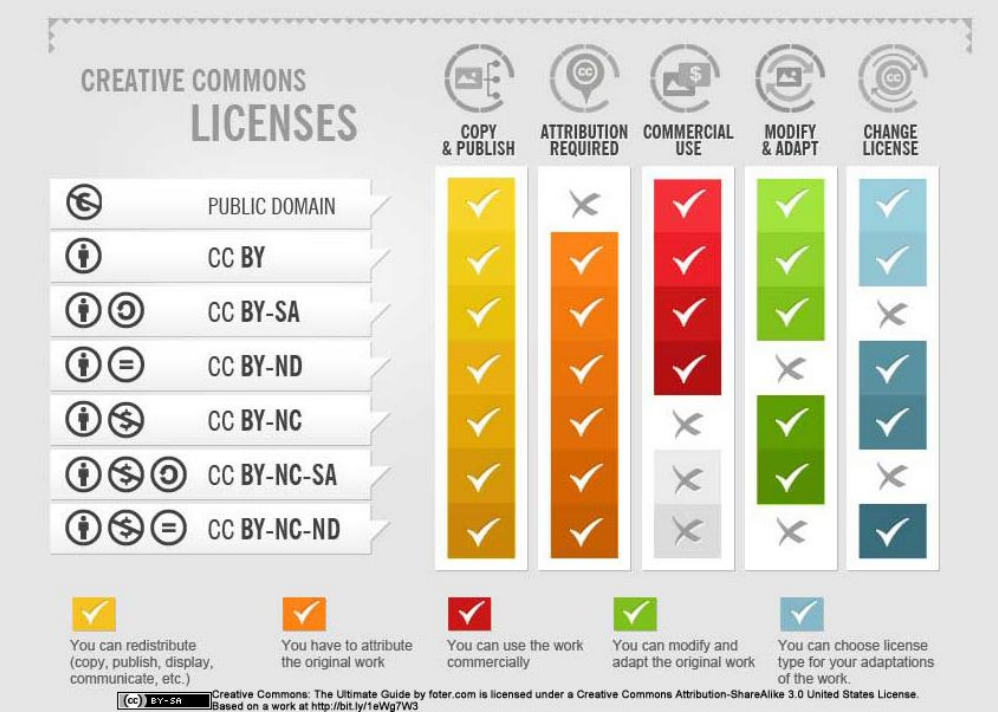


Fig. 2 Kinds of Creative Commons Licences

We opted for a Moodle platform (actual stable version), configured in a dedicated and customised way. The configuration adopted incorporates the add-ons needed to apply the design model adopted in the courses. The platform meets the following requirements in particular:

- it is fully compliant with all operating systems, devices and browsers

- it is configured specifically for the management of groups of users engaged in asynchronous, many-to-many, collaborative and structured interactions that can be deferred over time according to the needs and possibilities of individual participants
- it is based on the aggregation of "objects" corresponding to different types of educational activities and it is possible to fully track user behaviour and produce the relevant reports
- It is fully compliant with the WCAG 2.0, ATAG 2.0, ARIA 1.0 and Section 508 (USA) standards; moreover, it is an Open Source environment, according to the European Union policy.

The platform is integrated by a set of plug-ins and add-ons focused on learning design needs. The most important add-on is a plug-in to manage educational objects produced by the project H5P.

More information about H5P Project: https://h5p.org/about-the-project

H5P is fully compliant with html5 and released under creative commons licence. Each H5P OER is interoperable on most common LMS and CMS platforms and can be shared alike downloading the XML structure.

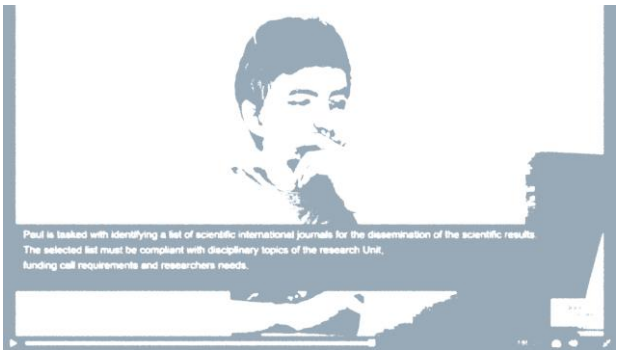
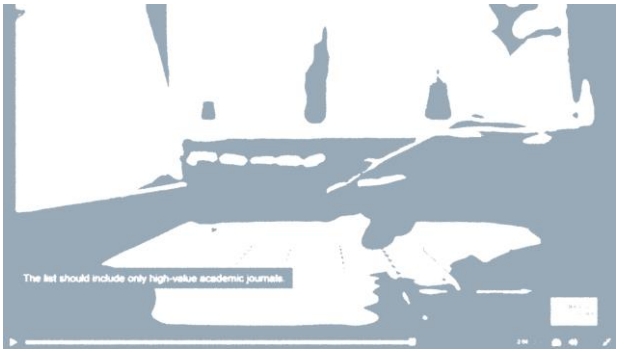
Chapter 2: Example of a storyboard for problem posing

In this chapter a general storyboard is outlined. It is applicable to most cases and can be varied or integrated with additional scenes depending on the type and complexity of the problem. Regarding the types of problems see *BRAIN@WORK Guidelines for Instructors* (chapter 3.1 *How to design an authentic problem*).

The list of essential scenes can be, for example, the following:

1. Cover image with the title	
2. CHARACTER: Presentation of the character with whom the student can identify: the scene shows the context of the problem (what the character is doing)	
2a. More details about the character (who is the character)	

3. SCENARIO: Brief description of the scenario (for example a research centre)	
4. CONTEX: Detailed description of the work or study context in which the problem is posed (for example the working group). Click and explore: detailed information on scenario and context 4.a Accurate description of how the context is organised, expectations and level of the context, presentation of team members). Click and explore: invitation to further explore the context with challenging questions	
5. PROBLEM: Focus on the reasons why the problem arises. Click and explore: invitation to reflect on some aspects of the problem.	
6. VARIABLES: Scenario and/or context variables resulting from the external factors affecting the problem. Click and explore: invitation to read the documentation to deepen these variables.	

7. CHALLENGE: What does the character have to do? Description of the character's challenge. Click and explore: questions to activate foreknowledge (i.e. stimulate ideas, suggest the fact that for the type of problem being posed there may be various types of solutions).	
8. ACTIONS: First actions taken by the character to tackle the problem	
9. TASK: Description of the task in details	
10. ENGAGE: In order to facilitate the identification of the trainee with the character, the final scene is an invitation, for example, to help the character in carrying on his/her task.	

In order to implement the storyboard, it is suggested if possible to use, in accordance with the spirit of the project, audiovisual materials distributed under Creative Commons licence. Trainers will produce texts and dialogues. If trainers want to produce their own audiovisual materials too, it is recommended that they be made available online under a Creative Commons licence.

More information about Creative Commons:
https://creativecommons.org/share-your-work/

Chapter 3: LU1 – How to choose scientific journals. Find, evaluate and select it

3.1 Dossier for students

Title: The value matters (Case Study - Decision making)

Paul is a young researcher who works as research fellow at public Research Center in a European Country.

He's a biologist with a Phd on materials sciences and He's 29 years old. He works at Bio-Nano Lab in a multidisciplinary research Unit.

The team involving physicists, biologists, chemists and engineers, all engaged in studying nanomaterials for biology and their application in different fields.

The Head of Research Unit is Anna M. She's a senior researcher at Department of Physical sciences and technologies of matter.

She's a physicist with PhD on Nanomaterials science.

She has authored or coauthored over 70 publications in peer-reviewed scientific journals in Materials science and Biochemistry, with more 3500 citations and H-index 28 (source Scopus).

The major research area at the Unit are:

- engineering nanocomposite materials with bio-responsive proprieties
- developing nano biosensors and bio-hybrid materials
- applying high-resolution imaging techniques for nanomaterials characterization
- studying in vitro behaviour of nanomaterials

The group is actually writing a project proposal focused on fabrication of nanostructured polymeric materials with antimicrobial activity, specifically biopolymer nanofibers and nanocomposites, and on their application for infection disease management in healthcare. The proposal should be submitted in an European Commission funding call. If approved, the project plan will forseen the publication of 4 articles in two years.

Paul is tasked with identifying a list of scientific international journals for the dissemination of the scientific results. The selected list must be compliant with disciplinary topics of the research Unit, funding call requirements and researchers needs. The list should include only high value academic journals.

Paul decides to start his research from publishers' selector tools. You can see here the first results that Paul found and then he tries to find checklists and strategies that can support his choices. The selected list should be discussed with colleagues and shared in the final version at the weekly team meeting.

Your group must help Paul accomplish his task. Start now!

¤ ***Step one – Check your values***

Read the problem text carefully and answer the following questions individually. Then compare your answers with your group.

Think about the following questions:

1. What defines the value of a scientific journal?
2. How can you evaluate a scientific journal?
3. Can publication aims, research assessment, open science influence the judgement? How?
4. Which other factors can or should be taken into account?

¤ ***Step two – Select your journals***

Read the problem in detail and highlight data and elements necessary to take into account.
Your team must define the dissemination strategy accomplishing the following tasks:

1. Supply a list of the selected best journals for the submission
2. Provide a checklist that explains the strategy adopted to find and select the journals
3. Schematize and graphically represent the adopted criteria to compare and evaluate the journal

3. 2 Dossier for instructors

Title: How to choose scientific journals. Find, evaluate and select it

Authors:

Ornella Russo (Consiglio Nazionale delle Ricerche)

Stefania Marzocchi (Consiglio Nazionale delle Ricerche)

Mario Rotta (Smartskills Center)

Discipline: Information Literacy Education

Target audience: Doctoral and post-doctoral Students, Early-career researchers

Abstract: The number of scientific journals is growing exponentially from year to year, recent statistics show that the number of published scientific papers has climbed by 8–9% each year over the past several decades. The exponential growth of scientific literature is making it extremely complex for researchers and academics to stay current and be able to identify relevant scientific journals for publication of their research results. Targeting the best journals is a complex issue, compounded by the emerging changes in the publishing landscape, the new

issues in research assessment and Open Science ambition of European Commission. Starting by an authentic real-world problem students will be involve in defining a plan to evaluate scientific journals and elaborate personal strategy.

Learning outcomes

- At the end of this learning unit learners will be able to:
- evaluate the quality of scientific journal
- acknowledge the news issues in research assessment practices
- acquire effective strategies
- acquire awareness about habits and behaviour in this field

Student resources

1. Hicks, D., Wouters, P., Waltman, L. et al. Bibliometrics: The Leiden Manifesto for research metrics. Nature 520**,** 429–431 (2015). https://doi.org/10.1038/520429a
2. Priem, J. Taraborelli, D., Groth, P. Neylon (2011). Altmetrics: A manifesto, https://altmetrics.org/manifesto/
3. San Francisco DORA Declaration on research assessment (2012), https://sfdora.org/read/
4. Simons, K. (2008). "The Misused Impact Factor". Science. 322 (5899): 165. doi:10.1126/science.1165316

Instructor resources

1. Bahadoran Z, Mirmiran P, Kashfi K, Ghasemi A. *Scientific Publishing in Biomedicine: How to Choose a Journal?*. Int J Endocrinol Metab. 2021;19(1):e108417. **doi: 10.5812/ijem.108417**.

Assessment Strategies

A. A grading rubric to assess students solution
B. A questionnaire to assess acquired knowledge

For practical examples of assessment tools please see BRAIN@Work Output 4 Assessment tools for measuring IL-Acquired competencies.

Notes for instructors

In this field other instructors who already used the template could add some suggestions to improve the dossier or also show data or any other information useful to better manage the problem-solving process.

Chapter 4: LU2 – Stay update in your topic

4.1 Dossier for students

Case Study

Danny McFly, a materials science researcher recently graduated. He is completing a first research on material forming during which he did a state of the art, wrote hypotheses, conducted research and wrote a paper with three other colleagues. His paper was accepted with several rounds of corrections and published a year later. He will have to do more research on the same subject and must keep up to date on the issue of the use of composite materials in civil aeronautics.

He will have to set up a current-awareness to follow the evolution in this field. We suggest that he:

A. use Scopus and Google Scholar to create and manage email alerts,
B. test and compare different RSS reader,
C. set up a Tweeter post watch.

With Scopus and Google Scholar, he will have to enter a specific equation to set up an alert system.

To be informed of the publication of new articles in the periodicals of the domain, he must, after identification of titles, set up a watch with the RSS function associated with his mail manager or a tested RSS reader.

To stay informed about new relevant patents, he must use RSS feed in WIPO Patentscope.

He must also, using Tweeter, set up a watch with three hashtags via the Tweetdeck tool.

The student should ultimately implement an effective strategy of monitoring bibliographic databases, periodicals and exchange in tweeter to realise a current-awareness in a specific topic.

Prerequisites:

Develop a query on Your topic

- specify the issue(s) to be observed
- break down the question into concepts
- define keywords accurately
- apply searching techniques: boolean logic, truncation and phrase searching
- delineate the meaning and content of each concept to avoid terminological uncertainty
- write a query

Should be verified based on the following search equation:

("composite materials" OR "ceramic matrix composite" OR CMC*) AND ("civil aeronautics" OR "commercial aircraft" OR "airline industry" OR "civil aircraft")

Information for current awareness

What's an RSS feed and what makes a good RSS reader application?
By small groups: search of information; choice of two readers, test, rapport, comparison with other groups.

There are a few major types of current awareness services:

- Journal alerts - be notified when a new issue of a relevant journal is released
- Citation alerts - be notified when a relevant paper is cited
- Saved search alerts - do a database search, and be notified whenever new papers matching your search terms are published
- Conference alerts - be notified of upcoming conferences in your field
- Book alerts - be notified of new books in your field

How you set up the alerts will vary depending on the database or web site which provides the alerting service. Keep your eye out for the RSS symbol or the word 'alert'. To receive email alerts you will often be asked to create a free account.

https://bond.libguides.com/searching-the-literature/info-for-current-awareness

4.2 Dossier for instructors

Discipline: Information Literacy Education

Target audience: Doctoral and post-doctoral Students, Early-career researchers

Context

In many respects the current awareness process is the opposite of the retrospective search. The retrospective search begins with the need to locate information on a specific topic for a specific purpose. The goal of current awareness on the other hand is less specific. It is the need to understand current developments in order to do one's work more effectively.

Current awareness then is knowledge of recent developments in a field. Generally, the knowledge is of developments which relate to an individual's profession. Kemp has listed four types of knowledge involved in the current awareness process: new theoretical ideas and hypotheses; new problems to be solved; new methods and techniques for solving old and new problems; and new circumstances affecting what people do and how they may do it. We can

also add discussion of ideas; forthcoming events information; personalities news; and research funding opportunities.

Learning outcomes

1. Describe the principle and the utility of current-awareness services

(there are supports proposed by different tools)

2. Organize current awareness:
   - explain the need to keep up-to-date with information and developments in your field
   - identify current-awareness services, their uses and specify
   - identify a relevant current-awarenes service according to needs
   - use command languages (boolean operator, exact phrase, truncation...) of this awareness services
   - use the functionalities specific of this awareness service to perform automatic search

3. Evaluate the relevance of results and methods:
   - test and select different free RSS feed readers
   - on the basis of the results obtained, evaluate Your information awareness strategy
   - fine tune Your information awareness strategy
   - evaluate and select the information
   - update Your knowledge

4. Get email alert on various topics
   - Alert on citations of the first paper written to see researchers interested on
     - Google Scholar – Email alerts
     - Get notified when new papers matching my search criteria are published
     - Get notified when my paper or a particular paper is cited
     - Get notified of new papers published by my colleagues
     - Scopus – Email alerts
     - Search alerts
     - Document citation alerts
     - Author citation alerts.

5. Building collaborative relationships with my colleagues
   - Follow scientific associations or researchers on LinkedIn or Twitter to stay informed about current events.
   - Getting started with content curation.

Resources

1. Stenstrom & Tegler, 1988, Current Awareness in Librarianship, Library Trends, pp. 725-740. https://core.ac.uk/download/pdf/4816907.pdf

2. Kemp, David Alasdair. Current Awareness Services. London: Clive Bingley, 1979, p. 12.

For information

New RSS feed in PATENTSCOPE - May 19, 2022
Changes were made to the RSS feed in PATENTSCOPE: the RSS button in the result list no longer works. In order to create an RSS page that can be used in an RSS feed reader, users have first log in to their WIPO account, run their queries and save them, making sure that the private query box is unticked. In the saved queries, the RSS button will be available.

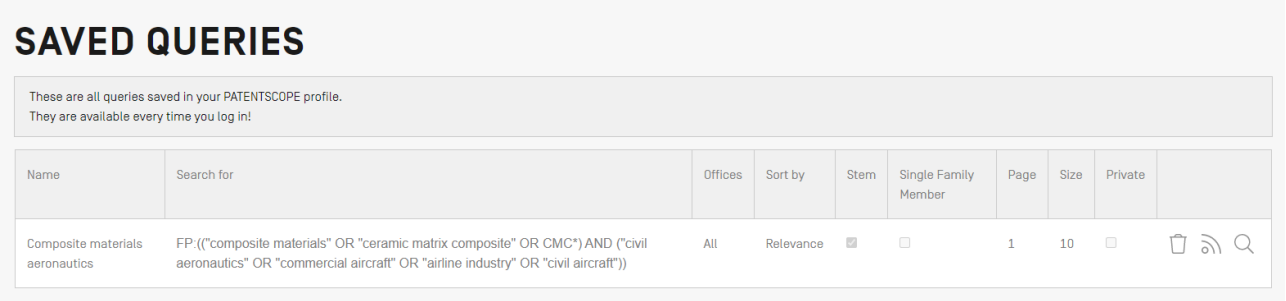


Fig. 3 Example of saved queries

Chapter 5: LU3 – Building and development of Researcher's Digital Identity (DigID)

5.1 Dossier for students

Case description

Postdoctoral researcher Peter joins a team of researchers who have launched an international project to study sewage water of large and medium cities to predict the course of the Covid pandemic. Project dissemination activities are discussed during the kick-off meeting of the team.

The project manager finds that two of the researchers involved in the project, as well as Peter, have not created their profiles in the researchers' databases. Peter and the other colleagues received assignment to solve the problem with their public identification as researchers. In addition to working with research data, he is responsible for creating his own profile in researchers' databases, and project-related social media accounts.

From the project application documents, Peter finds out that his **organization's social media account**s and the **project's social media accounts** have been chosen as communication channels for this project. The project application, in terms of its communication on social media, states that **two social media platforms** should be used and that information about the project should be generated twice a month, representing all the main activities of the project.

Moreover, the target audiences of the communication include both researchers in the field in the five countries and the public interested in the latest scientific discoveries.

Peter is given one month to complete both tasks and show what content he has created on research platforms and social media platforms to identify him as a researcher and to demonstrate his involvement in particular project.

Peter decided to divide these tasks into several parts and follow these steps:

1. Researcher databases will be explored for registration.
2. The information needed to register in major scientific databases will be explored.
3. Examine the content of the new project to decide how to communicate it on social media accounts.
4. Create a draft social media content plan (for individual posts) and offer to discuss it with the project manager and project colleagues.
5. The first records will be created in the researchers' databases.
6. Create the first social media records about the research project and your work in it.

¤ ***Step 1. Check and evaluate your knowledge***

Read the problem case text carefully and answer the following questions individually. Then compare your answers with the class.

Questions

1. Are there any terms or concepts presented in the case study that need to be clarified?
2. Do you know communication platforms' tools mentioned in the problem?
3. Can you identify the communication aims and features of the researchers' platforms?
4. Can you characterise the communication aims and features of the social media platforms?
5. Can you describe the main characteristics of researchers' identity – generally and individually?
6. Could you explain what kind of DigID information shall be included in researchers' platforms?
7. Could you explain what kind of DigID information shall be included in social media platforms?
8. How can you use your project's web page for DigiID development?
9. What are your ideas to visualise your project-related DigiID?

‡ *Duration: 90 min = 30 min + 30 min + 30 min*

¤ ***Step 2. Reflect and Brainstorming [Division of the class into small groups – up to 3 - 4 students]***

Take a few minutes individually to reflect about the following questions:

1. Have you already faced the problem explained in case in your experience?
2. How did you behave and decide?
3. If you are familiar with the problem, please, share your experience by reflecting on risks and opportunities?

Then, share your responses with your group. After sharing and discussing your responses, create a group report that answers to the questions below. Be prepared to share the report with the whole class.

1. How do you define DigID? Please chose and use at least 3 keywords that describe your DigiID.
2. What is the form and content of researcher's DigID, based on your individual situation?
3. What challenges/issues face researcher who need to create DigID for researchers' platforms?
4. What challenges/issues face researcher who need to create DigID for social media platforms?
5. How to combine general information of DigID and project related information to be published on social networking platforms?
6. What decision-making strategies are represented in your group?

‡ *Duration: 90 min = 30 min + 30 min + 30 min*

¤ ***Step 3. Analyse the problem [Activity in small groups, up to 3 – 4 students]***

Read the problem in detail and highlights data and elements necessary to consider for your decision-making process. Specifically, build a table distinguishing between the following elements:

- objective data on Peter's DigID profile and working reality
- factors that can influence DigID development process (e.g. personal data, research and communication ethics, character of the project);
- criteria that can be used to evaluate prepared information for both researchers' platforms and social networking platforms.

Be prepared to share your ideas and proposals with the whole class.

‡ *Duration: 90 min = 30 min + 30 min + 30 min*

Your team must complete the assignment by distance accomplishing the following tasks:

1. Supply a list of the 3 researchers' platforms to register yourself. Please, explain your preferences.
2. Provide a checklist that explains how to select information and data needed for the building DigID.
3. Schematize and graphically represent the decision-making process applied to evaluate communication forma and content for DigID.
4. Provide created examples for the following needs:
   - Example of your account on Orcid,
   - Example of post on two social media platforms that identifies you as a researcher,
   - Example of two various posts that link your general DigID and project-related information, including visualisation ideas.
5. Discuss your choices with group members.

5.2 Dossier for instructors

TITLE	**How to develop digital identity as a researcher**
DESCRIPTION	The digital identity of a researcher is increasingly multiple and distributed between authors profiles, identifiers and social networks for academia and research. Online visibility level, number of followers and reputation are elements that are also increasingly influencing the world of scientific research. Starting from the case problem that the trainees will be asked to solve, they will acquire the knowledge and tools necessary to distinguish between the different existing profiles and the related purposes, refining the assessment and management skills of their online identity.

TARGET	Post-graduate students, Doctoral Students, Post-Doctoral students, Early Career Researchers
AREA OF INFORMATION LITERACY COMPETENCE	Management
LEARNING OUTCOMES	At the end of course learners will be able to: • Develop content of digital identity for individual researcher • Define the digital platforms and sites that fits digital identity development needs for researcher • Differentiate digital platforms and tools for DigID building • Create various materials/content for digital identity building • Manage DigID development and results • Understand the various needs and standards of research process and study results dissemination in digital environment • Define the ethical and legal dilemmas related with digital communication and research process • Distinguish researcher's digital identity characteristics from other online identities
MAIN CONTENTS	1. Digital communication basics (aims, tasks, models, functions), 2. Digital communication ethics and regulation 3. Basic of identities and digital identities 4. Digital platforms and sites for researcher DigID development 5. Digital communication tools, formats, genres (content and technical issues) 6. Digital communication strategic and tactics in DigID development 7. Basic of digital platforms algorithms
ASSESSMENT TOOLS	1. DigID development plan presentation (structure: aims, tasks, duration, content, tools, platforms, audiences, expected results) 2. DigID defining content for individual young researcher at 3 scientific/research platforms. 3. DigID developing content for 2 social networking platforms (e.g. Linkedin, Instagram or other) 4. DigID formats: 3 posts/news, one photo, three videos (2 sec, 8 sec, 20 sec) 5. Final presentation of DigID, list of question on further development, discussion

EDUCATIONAL RESOURCES FOR STUDENTS	Craft, A. R. (2020). Managing researcher identity: Tools for researchers and librarians. *Serials Review*, *46*(1). 44-49. https://doi.org/10.1080/00987913.2020.1720897 Agudo, I. (2010). Digital Identity and Identity Management Technologies", *UPGRADE - The European Journal of the Informatics Professional,*, 6 - 12, NICS Lab. Publications: https://www.nics.uma.es/publications Pimenidis, E. (2010). Digital Identity Management. In Hamid Jahankhani , H., Watson, D.L., Me, G., & Leonhardt, F. (Eds.). Handbook of Electronic Security and Digital Forensics. World Scientific Books, 279-294. DOI: 10.1142/9789812837042_0015
EDUCATIONAL RESOURCES FOR TEACHERS	Mesmer-Magnus, J. R., Asencio, R., Seely, P. W., & DeChurch, L. A. (2018). How Organizational Identity Affects Team Functioning: The Identity Instrumentality Hypothesis. *Journal of Management*, *44*(4), 1530–1550. https://doi.org/10.1177/0149206315614370 Litchfield, R.C., Karakitapoglu, Z., Gumusluoglu, L., Carter, M., & Hirst, G.(2018). When Team Identity Helps Innovation and When It Hurts: Team Identity and Its Relationship to Team and Cross-Team Innovative Behavior. *J PROD INNOV MANAG*, *35*, 3, 350–366. DOI: 10.1111/jpim.12410 Pinheiro dos Reis, d., Puente-Palacios, K. (2018). Team effectiveness: the predictive role of team identity. *RAUSP Management Journal*. https://doi.org/10.1108/RAUSP-07-2018-0046 Muhammad, M., Wallerstein, N., Sussman, A. L., Avila, M., Belone, L., & Duran, B. (2015). Reflections on Researcher Identity and Power: The Impact of Positionality on Community Based Participatory Research (CBPR) Processes and Outcomes. *Critical Sociology*, *41*(7–8), 1045–1063. https://doi.org/10.1177/0896920513516025 Norton, B., & Early, M.. (2016). Researcher Identity, Narrative Inquiry, and Language Teaching Research. *International Journal of Computer Science and Mobile Computing*, *5*, 1, 183 – 190.

Learning outcomes in details

Learning objectives	**Learning outcomes**
Knowledges on:	**Remember:** • Define usable digital sites and tools for building digital identity (DigID) of scientists

• Set of digital platforms for researcher DigID building and their features, audiences • Digital identity features – text and visual images • Digital communication basics • Public communication ethics basics • Public privacy issues in digital communication **Skills:** • Digital communication • Research platforms' content management • Social networking platforms' content management • Creation of various digital communication formats (e.g., posts, news, photos, videos, stories, audio) **Competences** • Make decisions on aims and tasks of digital ID development • Make decisions on content of digital communication for DigID development • Analyse digital identity features (content and formats) according to research needs and digital communication ethics • Analyse digital identity communication data (visibility, audiences, frequency)	(e.g., Orcid, Academia, Research Gate, Linkedin, local sites etc.) • List the network of digital communication sites, players, functions, content, features • Define functionality of public digital platforms for DigID building • State technical features to use digital platforms, including publish information, raise discussions on professional issues **Understand:** • Describe what is digital identity of researcher (composition of digital ID) • Classify aims and content of Dig ID development for individual/project/team/organisation • Differentiate DigID of individual and researcher • Differentiate communication tools of various sites (researchers oriented and public networking platforms for wide audience) • Describe digital communication basic • Recognise private data management and privacy protection issues in public digital • Identify role of DigID for the project's needs (e.g., Horizon2020, ERASMUS+, Cost Action) **Analyse:** • Examine existing digital identities of participant: structure and content, and effects • Classify existing digital identities of other researchers • Distinguish risks and opportunities of various DigID features • Test threats of "fake news" in digital environment • Organise digital communication data • **Evaluate:** • Defend ideas of DigID building for new project/team/organisation • Select information (content, formats) developed for DigID building • Critique links and dilemmas between research ethics and digital communication needs

	• Defend the various needs and standards of research results dissemination in digital environment • Value digital ID development steps and results **Create:** • Design own DigID at least for 3 researcher sites and two social networking sites • Develop DigID development plan and activities plan, including set of formats, topics, activities • Develop text messages, the pictures and short videos (10 – 30 sec)

Chapter 6: LU4 – Agile Management in Scientific Writing

6.1 Dossier for students

Problem Handout

Part 1. Traditional to Agile Project Management

As a knowledge area, project management has shown an exponential growth and became increasingly more complex in the last years. However, it is practiced as long as humans exist and has been applied in many different contexts over the years. According to Project Management Institute (PMI), "Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements." (Project Management Institute, 2017).

In the last decades, project management has been extended for academic degrees and project management tools and techniques, from traditional to agile are spread around the world.

Traditional Methodologies have been used for several decades, and are characterized by a top-down model, ignore uncertainty, defend exhaustive planning and are resistant to change. From Code-fix, Waterfall, Rapid Application Development (RAD) to Spiral Development, many are the approaches that follow this path.

Then a series of new methods known as agile development methodologies emerged, and claim to overcome the limitations of traditional projects. These approaches have on their core a culture of embracing change and empowering people.

Agile methods, initially used by software development teams, can also be applied and facilitate teamwork in collaborative research and scientific writing. If on the one hand, management of collaborative research projects require flexibility, freedom and ability to deal with uncertainty to generate innovation, on the other hand a structured process is needed in order to transform creativity into valuable deliverables and avoid failure.

Scrum is a framework that defends a continuous planning, is based in self-organizing and empowered teams who divide their work into short work cycles called Sprints. Its incremental development through Sprints certifies that stakeholders give a rapid feedback regarding the developing product and that the team delivers the maximum business value as soon as possible. Scrum values ensure transparency in communication, commitment, focus courage and respect for others.

¤ ***Step 1 (after 2nd class). Discussion***

Answer the following questions individually. Then compare your answers with your group. Think about the following questions:

- What are the limitations of traditional project management approaches?

- What are the principles of Agile Manifesto?
- Describe the Scrum framework (roles, ceremonies and artifacts).
- Compare waterfall model with agile model in effectively writing articles.

Part 2. Autonomous Vehicles: What's the Future?

Automated vehicles (AVs) are now being widely tested and might soon be a reality in some of our roads. Until 2030 we will see the start of a huge transformation in the transportation sector, with AVs without a steering wheel or driver, at the forefront of this transformation. All these changes will create a set of new challenges, but also opportunities.

In the new driving paradigm, the car will also be considered a 3rd living space. Until then, the "third spaces" were stretched beyond the home-work border and included coffees, gardens, bookstores, etc. Now, this concept is being extended to the cars due to the possibility of undertaken activities during commutes that were once not possible to perform inside a vehicle.

With vehicles that will drive us autonomously, we will not need to own a car thus, car ownership eventually will gradually disappear. New business models will emerge in the area of transport, allowing the use of cars tailored to our needs, which will be available on request, optimizing the movement, with durations well controlled and defined paths. Moreover, a recent McKinsey & Company study found that self-driving cars will dramatically decrease car accidents by up to 90%, prevent up to $190 billion in damages and health-costs annually, and save thousands of lives. Thus, AVs will bring new opportunities to the most brittle population: elderly, blind people and people who do not have driving license.

However, like any new technology, there will be new ethical issues surrounding it.

¤ ***Step 2. Write your paper (to be developed during the course)***

Read the text carefully and write a scientific article with your group answering to the following research questions:

- What are the advantages and disadvantages of self-driving cars?
- How will autonomous vehicles affect society?
- What ethical questions are raised by the introduction of autonomous cars on the roads of our cities?

¤ ***Step 3. Presentation of the problem and creation of Product Backlog***

- Divide the class into groups of 4-7 students.
- Each team should read carefully the problem and select the type of scientific article and its associated structure.
- Each team create their product backlog, using the MoSCoW technique, i.e, translate the requirements to write a scientific article into prioritized Epics, Use Cases, Spikes and or User Stories to be developed during the project.

- ***Step 4. Create your Release Plan***

  - Each team should present the release plan, and define the intermediate deadlines of the project.
  - Each team define the duration of their sprints (1 week? 2 weeks?) - The Sprint is a time-box of one month or less, during which a potentially releasable product Increment is developed.

- ***Step 5. Perform the 1st Sprint Planning***

  - Each team define their Sprint Goal - The Sprint Goal is an objective to be achieved during the execution of the Sprint, by the implementation of a group of User Stories from the Product Backlog;
  - The team analyze the product backlog, and select from the most priority user stories, spikes the ones that the team commit to complete during the sprint.
  - Then the team decides how they want to achieve each user story/spike and breaks them down into a set of tasks, and assign these tasks to the team members, creating the Sprint Backlog.
  - Before the Sprint execution, the user stories/spikes and tasks committed are added to the Kanban board.

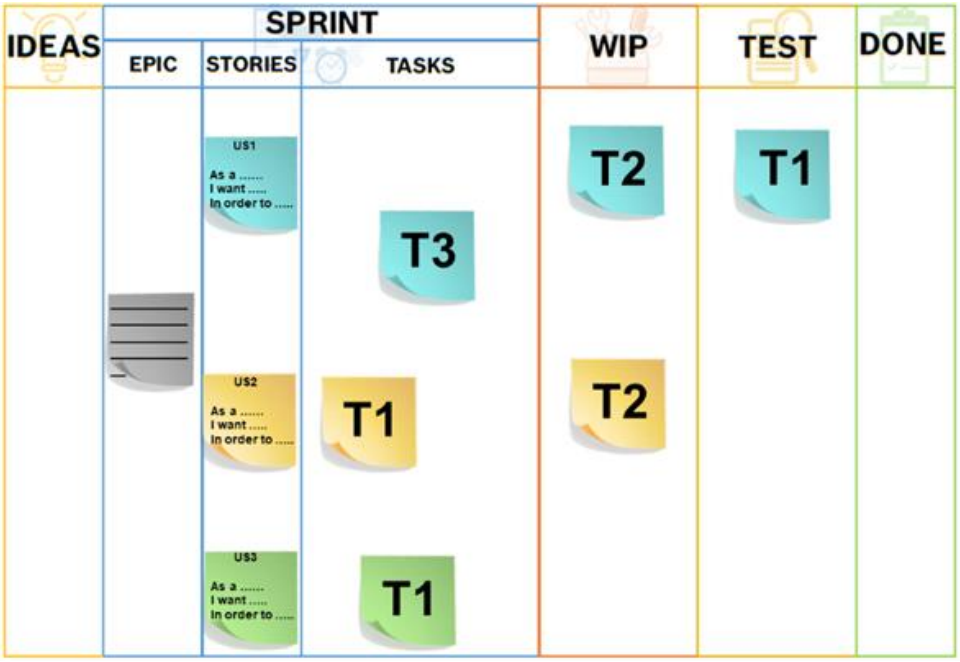


Fig. 4 Kanban Board

¤ ***Step 6. Perform Daily Scrum Meeting***

The Kanban board is a Scrum artifact, used by the team during the daily meetings to track the progress of the User Stories and respective tasks throughout the Sprint execution.

During this meeting, each team member answer the following questions:

- "What have you done?"
- "What are you doing?"
- "Is there anything blocking you?"

These three questions synchronize the team, allowing each team member to have the perception of what the other team members are doing, and if emerged some problem that is blocking the progress of a user story, the team is alerted and can work in the problem resolution.

¤ ***Step 7. Perform Sprint Review***

1. Each team presents to the Product Owner the deliverables of the Sprint and he accepts or rejects the completed User Stories/spikes according to the compliance of the acceptance criteria.
2. The team discusses what went well during the Sprint, what problems it ran into, and how those problems were solved. Then is considered what to do next, so that the Sprint Review provides valuable input to subsequent Sprint Planning.

¤ ***Step 8. Perform Sprint Retrospective***

The Sprint Retrospective is the last ceremony of the Scrum cycle. Right after the conclusion of this Sprint, a new Sprint starts.

1. The team gets together and reflects about the last sprint.
2. Each element should identify what went well during the Sprint and the team should keep, what did not go so well, and the team should stop doing, and finally search for opportunities for improvement regarding team's processes, tools, communication and other relevant topics to the project.
3. Each team create an improvement plan to in the next sprint.

¤ ***Step 9. Repeat Scrum cycle***

Perform Sprint Planning, Update the Product Backlog, Perform Sprint Review and Sprint Retrospective.

¤ ***Step 10. Final presentation***

Each team presents the work done during the project.

6.2 Dossier for instructors

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Discipline: Agile Management in Literacy Education

Target Audience: Master, Doctoral and post-doctoral Students, introductory, intermediate or advanced Researchers.

Keywords: agile management, agile scientific writing, agile knowledge work?

Length of Time/Staging: 28 hours in total. 15 hours in class and 13 hours for study out of class, write the paper and prepare the final presentation.

Abstract

Agile methods, initially used by software development teams, can also be applied and facilitate teamwork in collaborative research and scientific writing. If on the one hand, management of collaborative research projects require flexibility, freedom and ability to deal with uncertainty to generate innovation, on the other hand a structured process is needed in order to transform creativity into valuable deliverables and avoid failure.

Moreover, collaborative research work promotes the combination of different ideas and point of views that are needed to solve a problem, thus is paramount the adoption of a structured process that fosters task coordination, commitment of all participants, trust, transparency, and value delivery.

Starting by a real-world problem, students will be challenged to write a scientific paper following agile practices and tools that will allow them to plan and monitor their work as a team, and increase their communication, performance and effectiveness during the writing of a scientific paper.

Format of Delivery

1st Class: (1,5h)

- Presentation of the waterfall model (traditional approach of project management) and the agile model, as well as the agile manifesto, agile values and principles. (1,5h)

2nd Class: (1,5h)

- Presentation of scrum framework (an agile management approach):
    - o Roles (scrum master, product owner, development team;
    - o Ceremonies (sprint planning, daily scrum, sprint review, sprint retrospective, grooming),
    - o Artifacts (scrum board, planning poker, burndown chart).

3rd Class: (2h)

- Presentation of the problem.
- The class should be divided into groups of 4-7 students.
- Each team select the type of scientific article and its associated structure.
- Each team create their product backlog. During this class, the teacher should present the existing Product Backlog Items (stories, features, epics, spikes) and techniques of create and prioritize the backlog, presenting for example the MoSCoW technique or the value-difficulty matrix.

4th Class: (2h)

- Each team create the release plan, and define the intermediate deadlines of the project.
- Each team define the duration of their sprints.
- Performance of the first Sprint Planning meeting, defining the sprint goal (SMART technique), sprint backlog and assigning the tasks to the team members
- Each team design or choose a scrum board to track their project.
- The teacher should recommend the teams to perform the daily scrum meetings out of the class, so the team can keep the tracking of their project.

5th class: (2h)

- Performance of the sprint review meeting;
- Update the product backlog;
- Presentation of retrospective techniques;
- Performance of sprint retrospective meeting;
- Each team define an improvement plan;

6th, 7th classes (4h)

- Repeat scrum cycle cerimonies;

8th class: (2h)

- Final presentation.

Student Learning Objectives

1. Describe the principles of Agile Management
2. Describe the Scrum framework (roles, cerimonies, artifacts)
3. Compare waterfall model with agile model in effectively writing articles
4. Select the type of scientific article and its associated structure
5. Create and manage a backlog to write an article
6. Apply MoSCoW technique to build and prioritize PBI (Product Backlog Items) (Requirements for the article)

Student Resources

1. Beck, K., Beedle, M., Bennekum, A. van, Cockburn, A., Cunningham, W., Fowler, M., … Thomas, D. (2001). Manifesto for Agile Software Development. Obtido de https://agilemanifesto.org/
2. Caetano, T., Caroli, P., & Ramos, G. (2016). Fun Retrospectives Activities and ideas for making agile retrospectives more engaging.
3. Project Management Institute. (2017). *A Guide to the project management body of knowledge (PMBOK guide) sixth edition/ Project Management Institute*. (Sixth edit). Newtown Square, Pennsylvania: Project Management Institute, Inc.
4. Schwaber, K., & Sutherland, J. (2017). The Scrum Guide TM, (November).
5. SCRUMstudy. (2017). A Guide to the SCRUM BODY OF KNOWLEDGE (SBOK TM GUIDE) Third Edition A Comprehensive Guide to Deliver Projects using Scrum Includes two chapters about Scaling Scrum for Large Projects and the Enterprise.
6. Sutherland, J. (2014b). SCRUM - The Art of Doing Twice the Work in Half the Time. (R. House, Ed.). 9781847941107.
7. Sutherland, J., & Heitz, H. (2011). Scrum and Lean: How a Lean Scrum Can Improve Your Performance. Tonini, A. C., & Spinola, M. D. M. (2006).

Instructor Resources

1. Caetano, T., Caroli, P., & Ramos, G. (2016). Fun Retrospectives Activities and ideas for making agile retrospectives more engaging.
2. Schwaber, K., & Sutherland, J. (2017). The Scrum Guide TM, (November).
3. SCRUMstudy. (2017). A Guide to the SCRUM BODY OF KNOWLEDGE (SBOK TM GUIDE) Third Edition A Comprehensive Guide to Deliver Projects using Scrum Includes two chapters about Scaling Scrum for Large Projects and the Enterprise.

4. Sutherland, J. (2014b). SCRUM - The Art of Doing Twice the Work in Half the Time. (R. House, Ed.). 9781847941107.

5. Sutherland, J., & Heitz, H. (2011). Scrum and Lean: How a Lean Scrum Can Improve Your Performance. Tonini, A. C., & Spinola, M. D. M. (2006).

Author's Teaching Notes

In the first class it will be presented to the class the waterfall model (traditional approach of project management) and the agile model, as well as the agile manifesto, agile values and principles. After the class the students should study "The Scrum Guide".

In the second class the scrum framework (an agile management approach) will be introduced to the class: Roles (scrum master, product owner, development team, ceremonies (sprint planning, daily scrum, sprint review, sprint retrospective, grooming), artifacts (scrum board, planning poker, burndown chart).

In the third class the problem will be presented to the teams and they should select the type of scientific article and its associated structure. Then the class should be divided into groups of 4-7 students. From this point these teams should be self-organized and should resolve the problem following an agile approach.

After the teams carefully understand the problem, they should now create the product backlog. During this class, the teacher should present the existing Product Backlog Items (stories, features, epics, spikes) and techniques of create and prioritize the backlog, presenting for example the MoSCoW technique or the value-difficulty matrix.

In the fourth class, each team should create the release plan, and define the intermediate deadlines of the project. Then each team should define the duration of their sprints (1 week, 2 weeks, three weeks maximum) and in this class the teams should perform the first Sprint Planning meeting, defining the sprint goal (SMART technique), sprint backlog and assigning the tasks to the team members. Then the team should design or choose a scrum board to track their project.

During the sprint (out of the class) the team should perform the daily scrum meeting, where each team member respond to these 3 questions: "what did you do yesterday? What are you doing today? and "is there something blocking you?" – this meeting has a time-box of 15 minutes.

In the fifth class the teams should perform the sprint review meeting, presenting the work done during the last sprint, verify that the work done meets the defined requirements and update the product backlog. If the work (spike/user story) meets the requirements defined, the product backlog item is removed from the backlog, otherwise the team should decide if it still has value and if so redefine it and reprioritize the product backlog, if not the item should be deleted and removed from the backlog.

Thus a few retrospective techniques should be presented to the teams, each one choose the preferred one and each team should perform a Sprint Retrospective meeting. Each team member identify positive and negative points that occurred during the sprint regarding processes, tools, and relationships, and give suggestions for improvement. The outcome of this meeting should be an improvement plan. At least one improvement suggestion should be added in the product

backlog and be performed during the next sprint, to guarantee a continuous improvement process.

Then the scrum cycle should be repeated until the scientific paper is written.

In the last class each team should prepare a presentation of the work done during the project.

Assessment Strategies

- Paper (quality of the paper assuming the students are not experts on the subject);
- Presentation (criteria: content, creativity, communication, discussion).

Solution Notes

The problem does not have any specific solution. Each team should be self-organized and find their best way to understand the problem, select the type of scientific article and its associated structure and create and manage the product backlog to write a scientific paper. During their journey they should learn and understand the agile principles and values, and apply them during the problem resolution.

Chapter 7: The autonomous learning courses

Despite the main educational approach chosen by the project to train future researchers was Problem Based Learning (PBL), the consortium also proposed autonomous training materials to be used in diverse scenarios. This autonomous courses could be sued in a complementary way with the PBL sessions. Autonomous courses have the advantage of being very scalable, and reaching a wider audience. However, they have the disadvantage that their feedback may not be so personalized and rich as the PBL courses.

In the project we provided four autonomous courses:

7.1 How to choose the best journal to publish?

The goal of the course is to learn how to analyse and compare scientific journals and target the most appropriate for your work and for you.
Choosing the wrong journal may lead to fast rejection, delayed publication, and waste of time/resources. Targeting the best journal is a complex issue, compounded by the increasing numbers of journals and the emerging changes in the publishing landscape.
Choosing the right journal for our case study is a difficult task that even for experienced researchers when submitting a work to a journal.

The course main characteristics and target

- Target: Early-career researchers, PHD and Post-Doc in STEM disciplines
- Information of the target: by the website.
- Timing: At your pace. The course estimated workload is 30 hours in total.
- Language: English
- Learning materials: Participants are granted to the course platform to get access to training materials and references.
- Enrolment: The course is free.
- Where to enroll: https://www.training.brainatworkproject.eu

Methodology

The course is addressed to early-career researchers, PHD and Post-Doc in STEM disciplines and includes the following steps:

- Step 1: Prepare the manuscript
- Step 2: Define the type and scope of the manuscript
- Step 3: Define the type and scope of potential journals

- Step 4: Define subjective criteria or personal aims
- Step 5: Select a Journal
- Step 6: Activity about handling journal rejection
- References and Glossary

At the end of the course learners will be able to:

- Find scientific journals by topic or discipline
- Evaluate the quality of scientific journal
- Acknowledge the news issues in research assessment practices
- Acquire effective strategies
- Acquire awareness about habits and behaviour in this field.

Assessment method: Quizes, decision trees and a glossary.

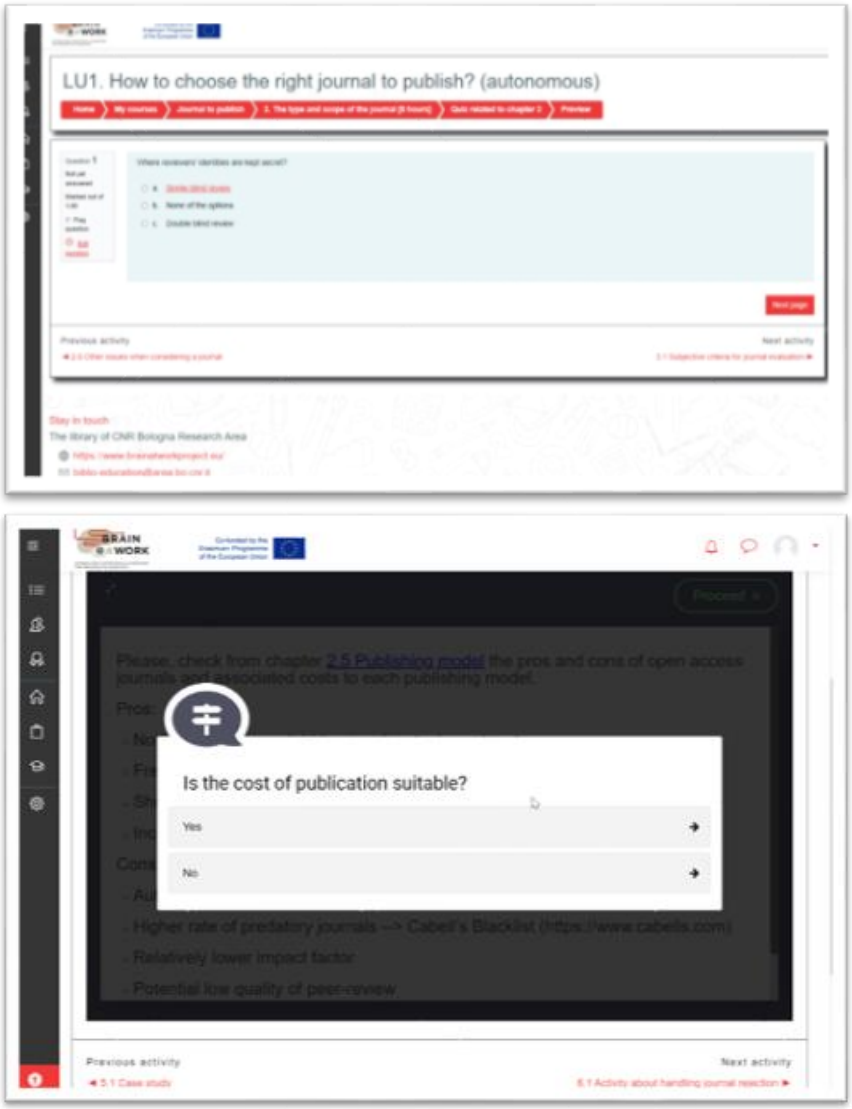

Fig. 5 Assessment pages in the e-learning platform

Results

The autonomous courses in this first phase have been an additional resource that has been used in a very limited way. That now, in the dissemination phase, a differentiated communication campaign is being carried out so that they are available to more students.

Selected bibliography

1. Bahadoran, Z., Mirmiran, P., Kashfi, K., & Ghasemi, A. (2020). Scientific Publishing in Biomedicine: How to Choose a Journal?. International journal of endocrinology and metabolism, 19(1), e108417. https://doi.org/10.5812/ijem.108417
2. Webminar: Help your research flourish: find the best-fit journal for your manuscript. https://clarivate.com/webofsciencegroup/campaigns/help-your-research-flourish-find-best-fit-journal-for-your-manuscript
3. Thompson, P. J. (2007). How to choose the right journal for your manuscript. Chest, 132(3), 1073-1076. https://journal.chestnet.org/article/S0012-3692(15)36678-2/fulltext
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5. Woolley, K. L., & Barron, J. P. (2009). Handling manuscript rejection: insights from evidence and experience. Chest, 135(2), 573-577. https://core.ac.uk/download/pdf/15127289.pdf
6. Shoja, M. M., Walker, T. P., & Carmichael, S. W. (2019). How to Find a Suitable Journal for Your Manuscript. A Guide to the Scientific Career: Virtues, Communication, Research and Academic Writing, 389-402. https://onlinelibrary.wiley.com/doi/abs/10.1002/9781118907283.ch42

7.2 Publishing open data

The course main characteristics and target

- Target: Early-career researchers, PHD and Post-Doc in STEM disciplines
- Information of the target: by the website.
- Timing: At your pace. The course estimated workload is 10 hours in total.
- Language: English
- Learning materials: Participants are granted to the course platform to get access to training materials and references.
- Enrolment: The course is free.
- Where to enroll: https://www.training.brainatworkproject.eu

Methodology

The course is addressed to early-career researchers, PHD and Post-Doc in STEM disciplines and includes the following steps:

- Chapter 1: Introduction to Open Data

- Chapter 2: Steps for data publishing
- Chapter 3: Publish in the best place
- Chapter 4: Describe your data
- Chapter 5: Use the best file format: 5-star Open Data
- Chapter 6: Licenses to publish the data

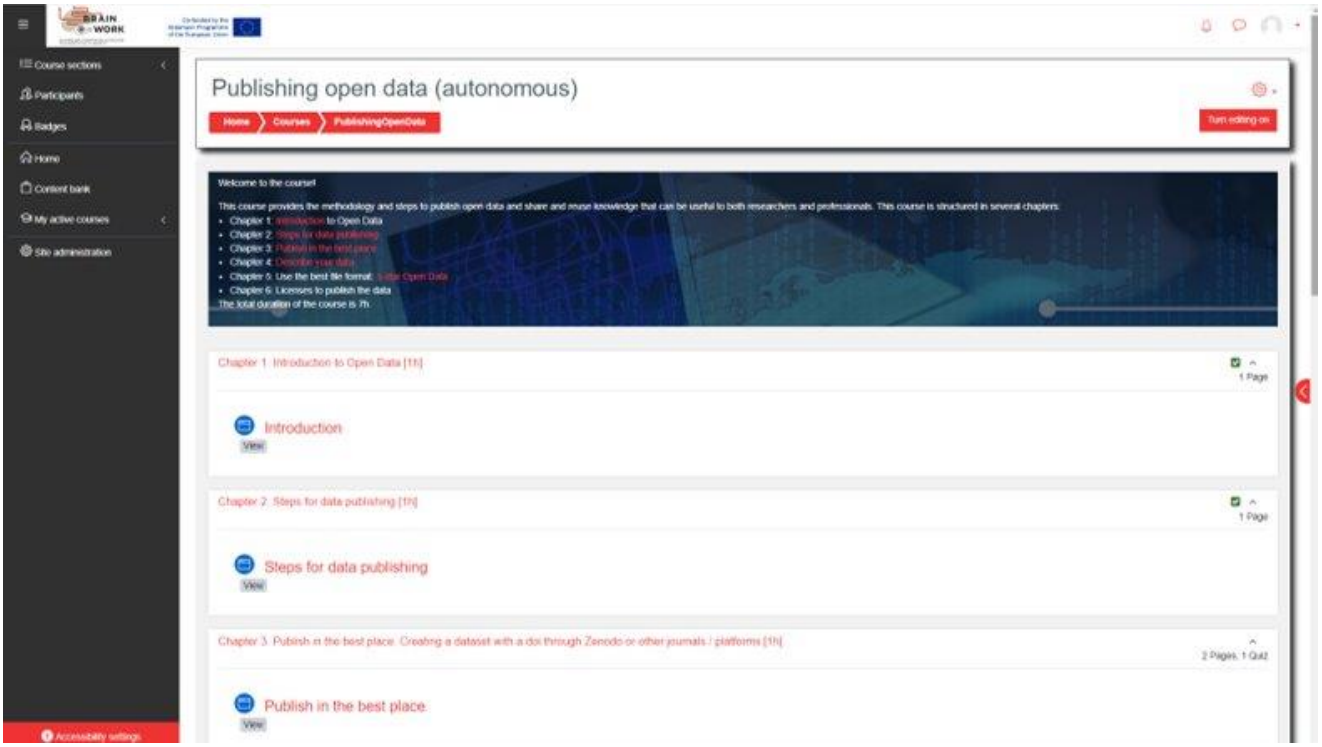

Fig. 6 Opening page of the course "Publishing open data (autonomous)"

Assessment method: Quizzes are used as assessment method.

Results

The autonomous courses in this first phase have been an additional resource that has been used in a very limited way. That now, in the dissemination phase, a differentiated communication campaign is being carried out so that they are available to more students.

Selected bibliography

1. https://opendatabarometer.org
2. http://dataportals.org
3. University of Sydney, data publication https://libguides.library.usyd.edu.au/datapublication
4. How to upload data to Zenodo for open science? https://youtu.be/S1qK_TA52e4

5. Scientific Data (nature.com): https://www.nature.com/sdata/
6. Data in Brief - Journal - Elsevier: https://www.journals.elsevier.com/data-in-brief
7. Data | An Open Access Journal from MDPI: https://www.mdpi.com/journal/data
8. Datasets Documentation | Kaggle: https://www.kaggle.com/docs/datasets
9. Datasheets for datasets https://cacm.acm.org/magazines/2021/12/256932-datasheets-for-datasets/fulltext
10. https://5stardata.info/en/
11. http://opendefinition.org/licenses/
12. More courses and references available at https://theodi.org/events/courses/
13. Wiki about publishing open data https://www.wikidata.org/wiki/Wikidata:Open_data_publishing
14. FAIR Tools https://www.fairsfair.eu/tools-software

7.3 Technology transfer beyond academia research outcomes

The course main characteristics and target

- Target: Early-career researchers, PHD and Post-Doc in STEM disciplines
- Information of the target: by the website.
- Timing: At your pace. The course estimated workload is 10 hours in total.
- Language: English
- Learning materials: Participants are granted to the course platform to get access to training materials and references.
- Enrolment: The course is free.
- Where to enroll: https://www.training.brainatworkproject.eu

Methodology

The course includes several videos and quizzes to evaluate the understanding of videos.
For this course, the information literacy skills provided focuses on the exploitation beyond academia research outcomes, technology transfer and intellectual property (IP).

Assessment method: Quizzes are used as assessment method.

Results

The autonomous courses in this first phase have been an additional resource that has been used in a very limited way. That now, in the dissemination phase, a differentiated communication campaign is being carried out so that they are available to more students.

7.4 Patent literature: The state of the art beyond bibliographic search

Methodology

The course includes several videos and quizzes to evaluate the understanding of videos.
This course aims to provide resources to enhance your information literacy skills by giving you an overview of intellectual property and patent literature search tools.

Assessment method: Quizzes are used as assessment method.

Results (some data regarding participants up to now)

The autonomous courses in this first phase have been an additional resource that has been used in a very limited way. That now, in the dissemination phase, a differentiated communication campaign is being carried out so that they are available to more students.

Conclusion

Assuming that the BRAIN@WORK proposed model is open to integrations and adaptations and intended as a set of best practices to be reused in different contexts in a flexible but organized way, the present document shows how the PBL approach can be adapted in practice to various topics and learning environments.

In the case of BRAIN@WORK project, all selected topics are connected with Information Literacy broadly intended, but the model could be useful for other learning projects in apparently distant topics too.

Annexes

Fig. 7 Flyers of the training activities addressed to young researchers

Annex 1. Example of another way to propose the problem

PROBLEM

THE VALUE OF MATTER

COURSE "HOW TO CHOOSE SCIENTIFIC JOURNALS?"

Paul is a young researcher who works as research fellow at public Research Center in a European Country.

He's a biologist with a Phd on materials sciences and He's 29 years old. He works at BIO-NANO Lab in a multidisciplinary research Unit.

The team involving physicists, biologists, chemists and engineers, all engaged in studying nanomaterials for biology and their application in different fields.(👁)

The Head of Research Unit is Anna M. She's a senior researcher at Department of Physical sciences and technologies of matter.

INSIGHT

INTERDISCIPLINARY RESEARCH

Interdisiciplinary research definition states:
"is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice"
(US National Academies of Sciences - Facilitating interdisciplinary research 2004)

POINTS TO REFLECT ON

- How does interdisciplinary affect publication choices?
- Are there scholarly journals for interdisciplinary research?

She's a physicist with PhD on Nanomaterials science.
She has authored or co-authored over 70 publications in peer-reviewed scientific journals in Materials science and Biochemistry, with more 3500 citations and H-index 28 (source Scopus). ( )

The major research area at the Unit are:
=> engineering nanocomposite materials with bio-responsive proprieties
=> developing nano biosensors and bio-hybrid materials
=> applying high-resolution imaging techniques for nanomaterials characterization
=> studying in vitro behaviour of nanomaterials

INSIGHT

BIBLIOMETRICS

This narrative is commonly used by researchers to describe their profile and value according to the most commonly used parameters of bibliometrics. Hovewer, in recent years, the experts in the discipline themselves have highlighted the distorted use of bibliometrics in research evaluation and have suggested new strategies for responsible metrics.
Watch the video and explore the ten principles of the Leiden Manifesto at (you can download it in your language).

POINTS TO REFLECT ON

- What are the key concepts of the text?
- How to make informed judgments?
- What relationship is suggested between quantitative evaluation and qualitative judgment?

The group is actually writing a project proposal focused on fabrication of nanostructured polymeric materials with antimicrobial activity, specifically biopolymer nanofibers and nanocomposites, and on their application for infection disease management in healthcare. (👁)

INSIGHT

POINTS TO REFLECT ON

- What disciplines does the project research topic relate to?
- What subject categories and keywords can you use to describe it?

The proposal should be submitted in an European Commission funding call. If approved, the project plan will forseen the publication of 4 articles in two years. (👁)

INSIGHT

POINTS TO REFLECT ON

The European Commission are promoting a new approach to scientific process based on the following two pillars:

- spreading knowledge as soon as it is available exploiting digital technology
- changing the standardized practice of publishing results only at the end of the research process

This is why Open Science is one of the key priorities of the European Union and one of the main objectives of the next research funding.

Click to read the 8 ambitions of the EU's open science policy.

Paul is tasked with identifying a list of scientific international journals for the dissemination of the scientific results.
The selected list must be compliant with disciplinary topics of the research Unit,
funding call requirements and researchers needs.

The list should include only high-value academic journals.()

Paul decides to start his research from publishers' selector tools

You can see here the first results that Paul found

and then he tries to find checklists and strategies that can support his choices.
The selected list should be discussed with colleagues and shared in the final version at the weekly team meeting.

Your group must help Paul accomplish his task.

Start now!

INSIGHT

EVALUATION ELEMENTS

In your opinion, the high value of a scientific journal depends on what elements?

EDITORIAL BOARD MEMBERS

How can you check Editorial Board? Which are their responsabilities? Wich criteria you can adopt to evaluate it?

PEER REVIEW PROCESS

How many types of peer review are you familiar with? How can you evaluate the quality of peer review process?

IMPACT FACTOR RATING

Wath is the meaning of impact? What is the relationship between journal impact factor and quality of published researchs? How you can compare Journals Impact Factor among different disciplines? Do you know of any other bibliometric or non-bibliometric indicators useful in assessing the impact of a scientific journal?

ACCEPTANCE RATE

Where you can find information about the acceptance rate of a journal? What is the relationship between acceptance rate and journal quality? Wich caution in using it as indicator?

PUBLISHER'S REPUTATION

How do you can define "publisher's reputation"? What elements identifie reputation? Are reputation and credibility related?

INDEXING

Is being indexed in a directory a value? What bibliographic databases, disciplinary indexes, journal classification lists do you know?

ALL OF THESE

Are there any other elements or criteria you can consider?

NONE OF THESE

What other elements do you think are important to consider? What evaluation criteria can you use?

EXERCISE

BIBLIOMETRICS

This narrative is commonly used by researchers to describe their profile and value according to the most commonly used parameters of bibliometrics. Hovewer, in recent years, the experts in the discipline themselves have highlighted the distorted use of bibliometrics in research evaluation and have suggested new strategies for responsible metrics.
Watch the video and explore the ten principles of the Leiden Manifesto at (you can download it in your language).

POINTS TO REFLECT ON

- What are the key concepts of the text?
- How to make informed judgments?
- What relationship is suggested between quantitative evaluation and qualitative judgment?

EXERCISE

EVALUATION ELEMENTS

In your opinion, the high value of a scientific journal depends on what elements?

EDITORIAL BOARD MEMBERS

How can you check Editorial Board? Which are their responsabilities? Wich criteria you can adopt to evaluate it?

PEER REVIEW PROCESS

How many types of peer review are you familiar with? How can you evaluate the quality of peer review process?

IMPACT FACTOR RATING

Wath is the meaning of impact? What is the relationship between journal impact factor and quality of published researchs? How you can compare Journals Impact Factor among different disciplines? Do you know of any other bibliometric or non-bibliometric indicators useful in assessing the impact of a scientific journal?

ACCEPTANCE RATE

Where you can find information about the acceptance rate of a journal? What is the relationship between acceptance rate and journal quality? Wich caution in using it as indicator?

PUBLISHER'S REPUTATION

How do you can define "publisher's reputation"? What elements identifie reputation? Are reputation and credibility related?

INDEXING

Is being indexed in a directory a value? What bibliographic databases, disciplinary indexes, journal classification lists do you know?

ALL OF THESE

Are there any other elements or criteria you can consider?

NONE OF THESE

What other elements do you think are important to consider? What evaluation criteria can you use?

EXERCISE

EVALUATION ELEMENTS

In your opinion, the high value of a scientific journal depends on what elements?

EDITORIAL BOARD MEMBERS

How can you check Editorial Board? Which are their responsabilities? Wich criteria you can adopt to evaluate it?

PEER REVIEW PROCESS

How many types of peer review are you familiar with? How can you evaluate the quality of peer review process?

IMPACT FACTOR RATING

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What other elements do you think are important to consider? What evaluation criteria can you use?

Annex 2. Training of Trainers: examples of other Learning units

Brain@Work project, beside the training activities addressed to students and researchers, foresees also a Training of Trainers (ToT) course addressed to instructors (librarians, teachers, trainers) aimed at train participants to become coaches on the potentialities of Information Literacy for scientific studies showing them how to use problem-based learning as hands-on training methodology. The first session was mainly a theoretical introduction to the problem-based training methodology while the second session was a practical exercise to learn hands-on how to design a learning unit applying PBL.

ToT participants, after a theoretical introduction to the PBL methodology, have been guided in the design of new learning units. Each group produced, at the end of the workshop, a structured idea for an original problem-based learning unit addressed to young researchers. The following images represent the main contents of the team work.

Fig. 8 Flyer of the ToT course

Group 1

How to write a systematic literature review (SLR)

E-tivities:

- difference between systematic review and non-systematic review: hide the title "systematic review" on a number of articles and students have to decide which is systematic and which is not. Difference in the description of the work. Output: checklist "Main characteristics of a SLR"
- what are the instruments (charts) to write the systematic review: which databases search in. Ask the students what was the research question of the articles we gave them in the E-tivity 1, to ask that question in different databases

RESOURCES:

- Prisma statement
- Pico
- others

Learning outcomes

- At the end of this learning unit learners will be able to:
- know the difference between SLR and literature
- to know how to question correctly a database
- to use the appropriate instruments to write a SRL

Assessment strategies:

- Rubric to assess the SLR produced by students
- Questionnaire for assessing knowledge

Group 1

How to write a systematic literature review (SLR)

DISCIPLINE: Information Literacy Education

Target audience: Advanced students, post-graduate, Researchers

Idea (how to pose the problem):

- Too much literature about many topics
- To make a statement about where we are, the state of the art
- To be able to find a way to organize knowledge
- To have a starting point for future studies in that topic
- Important competence in the companies too, not only in academic world
- It is necessary for a researcher to publish for his/her career

Authentic problem:

XY is a researcher (she)

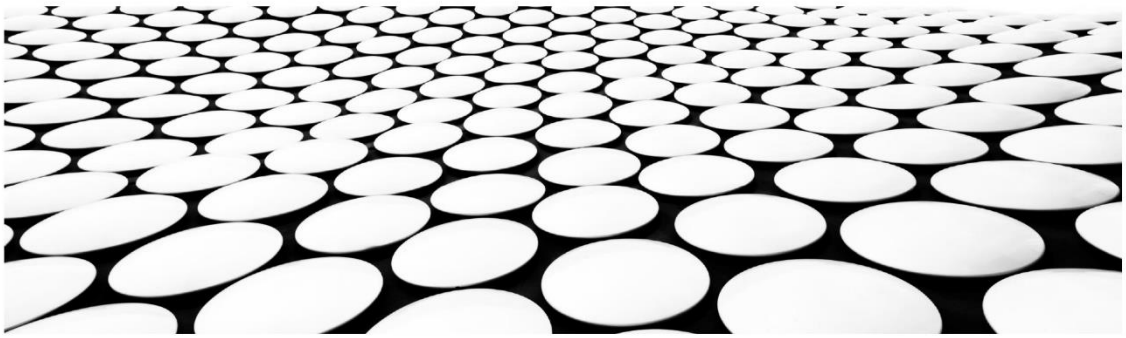
- needs to publish for her career
- she works in Health Department...
- she is specialized in pandemic
- she has little time, need for publishing as soon as possible
- it's easier to write a systematic review then to write an original article

Group 1

Group 2

GROUP 2

STEFANIA, LORENZO, ALICE, JURIS



BRAINSTORMING – LEARNING UNIT TOPICS

- How to choose a postgraduate path?
- How to make a real Carbonara?
- How to organize a study trip?
- How to chose a Training Course for Professionals (skills empowerment)?

17/03/2022

THE CRITERIA TO SELECT THE BEST TOPIC

- We all agree about the challenge students face every day when they have to choose their professional future.

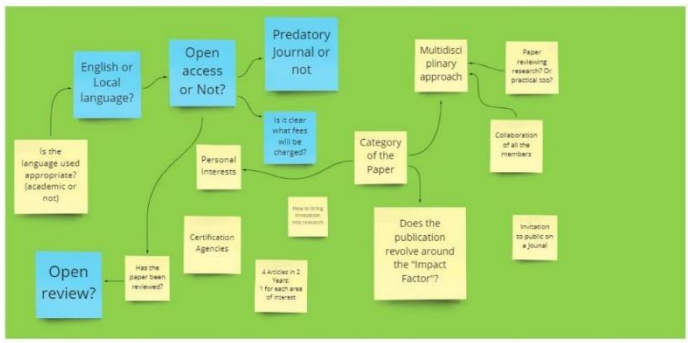
17/03/2022

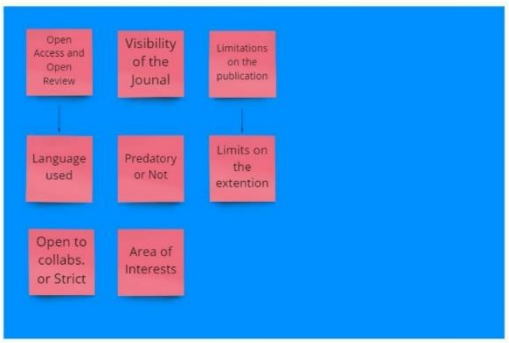
LERNING UNIT: HOW TO CHOOSE A POSTGRADUATE PATH?

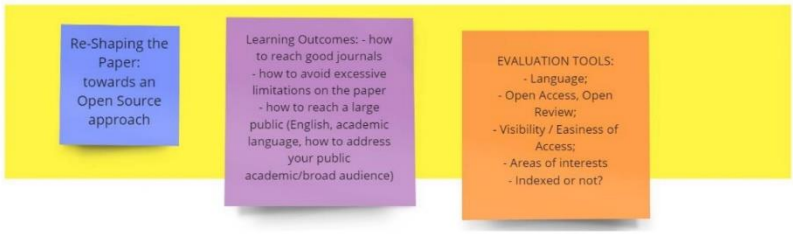
- Authors: group 2
- Disipline: HR - Professional Orientation
- Target: graduate students
- Idea: Creation of an effective way to better select a postgraduate path, basing on your aspiration as a future professionist.
- Authentic Problem: Alan and Beatrice are 24 years old studens, both graduated in foreing languiges. They are lookink for a job but they noniced that it's not easy as they thought. Most of the jobs aren't related to their education backraunds, eventhought languagies are useful. So they need further skills to be spent in the job market.

17/03/2022

Group 3







Group 3

For a clear view of all produced material and trainers' presentations see: https://www.brainatworkproject.eu/results/

BRAIN @ WORK

INFORMATION COMPETENCE AS BOOSTER FOR PROSPECTIVE SCIENTISTS

LEARNING UNITS 2022

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Intellectual Output 3

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