Intellectual Output 2

A4: Validation exercises

Deliverable: A4

30.6.2022

Empowering innovation in STE(A)M
through IP awareness
2020-1-UK01-KA201-078934

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REVISION HISTORY

Version	Date	Author	Description	Action	Pages
1.0	18/02/2022	INOVA+	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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Contents

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1.   IPinSTEAM project

1.1   The context

On the point of creativity and innovation being the roots of European cultural and socio-economic growth, respecting others' work becomes a far-reaching need both for professional and personal development of individuals (EUIPO, 2017). On the other hand, nowadays that online sharing of information is rife, one cannot help but wonder whether people are aware of proper ways to attribute others' ideas along with the necessity to reap the benefits of intellectual potential given the fact that most innovations are now highly related to technology.

Au contraire, the absence of Intellectual Property (IP) protection of educational materials and innovations – with online learning only deteriorating the situation – reveals a significant problem in many European countries. In fact, while uncontrolled access is given to educational resources across the Web, the majority of learners are not aware if IP is implemented in their work as well as ways to protect their own intellectual property (Evans, 2016).

On the grounds that STEAM comprises continuous innovation, invention, discovery and understanding of technical knowledge that lead to (commercial) products, the protection of inventions becomes more and more complex (National Inventor Hall of Fame, 2019). Conceivably, this reveals the rationale behind the lack of IP in school education. In particular, recent research has depicted the knowledge and implementation gaps related to IP, resulting in lack of knowledge about working definitions of IP in the field of Arts. In conjunction with the fact that most European countries are not in position to capture the relevance of IP in STEM, the need to integrate IP in STEAM curricula becomes even more significant (Office for Harmonization in the Internal Market, 2015).

1.2   Objectives

In order to address the lack of IP knowledge resulting in an inefficient implementation of IP in the world of inventions, the ***IPinSTEAM project*** aims at promoting IP strategies in schools and more specifically in STEAM education under the prism of confronting this issue from its roots. To generate awareness about Intellectual Property across European educational institutions, the project will develop an innovative ICT-enabled training package focused on the needs of K-12 STEAM teachers.

Towards that purpose, the project will develop and validate training materials tailored to the real needs of school teachers, educational institutions and STEAM departments towards giving shape to the integration of IP concepts into STEAM curricula.

1.3   Target groups

The ***direct target group*** of the project involves STEAM teachers, mainly primary school and lower secondary school teachers (ages up to 12). They will learn the key concepts of Intellectual Property along with useful information and guidelines about ways to efficiently implement IP strategies in STEAM-related subjects and integrate them into their curricula. By all means, all school STEAM departments can be regarded as direct target group of the project.

4

Empowering innovation in STE(A)M
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The *indirect target audience* of the project comprises:

- Students up to 12 years old
- Schools and educational institutions teaching STEAM-related subjects
- Law schools and departments
- Policy makers responsible for the design and implementation of actions relevant to ICT strategies for educational purposes
- Other institutions or organizations that are active in school education
- Authorities or organizations that can organize specific actions in order to contribute to the development of high-quality education
- Networks, voluntary associations and other NGOs that are active in school education
- Research communities active in the broader field of lifelong learning.

2. National report

2.1 Objectives

The objective of the present report is to present the results of the validation activities performed with representatives of the target group at national level. Each partner will have to engage at least 20 teachers and 5 students to validate the project outcomes, collecting the results of the validation questionnaires for teachers and for students. The aim is to receive valuable feedback towards continuous improvement.

Empowering innovation in STE(A)M
through IP awareness
2020-1-UK01-KA201-078934

Co-funded by the
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of the European Union

2.2 Questionnaire for teachers

Please score the following statements considering the scale:

1 = Completely Disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Completely agree.

	1.	2.	3.	4.	5.
The topics and contents addressed by the Gamified Mediator were relevant					
The scenarios proposed in the Gamified Mediator were adequate to the acquisition of knowledge on Intellectual Property (IP)					
The scenarios proposed in the Gamified Mediator were relevant/significant for teaching IP concepts on STEAM subjects					
The tips/feedback provided were adequate and relevant					
The proposed scenarios were original					
The proposed scenarios were adapted to the target-group					
The overall visual design of the Gamified Mediator was adequate					
The text was legible					
The animations used in the Gamified Mediator were adequate					
The proposed scenarios promoted students' engagement					
The proposed scenarios allowed the acquisition of knowledge in a fun and enjoyable way					

Empowering innovation in STE(A)M
through IP awareness
2020-1-UK01-KA201-078934

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of the European Union

My general evaluation of the Gamified Mediator is positive					

Please, feel free to add anything you find relevant regarding the Gamified Mediator.

2.3   Questionnaire for students

Please score the following statements considering the scale:

1 = Completely Disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Completely agree.

	1.	2.	3.	4.	5.
The topics and contents addressed by the Gamified Mediator were relevant					
The Gamified Mediator helped me to understand better the importance of Intellectual Property in STEAM subjects					
The Gamified Mediator gave me important knowledge and resources to apply Intellectual Property in STEAM subjects					
The proposed scenarios were original					
I enjoyed the Gamified Mediator					
The overall visual design of the Gamified Mediator was adequate					
The text was legible					

Empowering innovation in STE(A)M
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The animations used in the Gamified Mediator were adequate					
The tips/feedback were useful for clarifications					
The proposed scenarios allowed me the acquisition of knowledge in a fun and enjoyable way					
I would recommend this Gamified Mediator to others					
My general evaluation of the Gamified Mediator is positive					

Please, feel free to add anything you find relevant regarding the Gamified Mediator.

3.   Conclusions

The second Intellectual Output of the IPinSTEAM project comprises the IPinSTEAM Gamified Mediator, an online assessment tool to enhance understanding of IP strategies in STEAM subjects through gamified learning. This output acts as complementary to Intellectual Output 1 under the prism of increasing K-12 teachers' motivation to embrace new concepts in their training and thus to be able to generate awareness about the importance of IP among their students. The tool will serve as a mediator between the implementation of IP knowledge and STEAM-related subjects providing real-life scenarios that trigger users' critical thinking and problem-solving skills.

IPinSTEAM partnership performed the validation activities of the IPinSTEAM Gamified Mediator with representatives of the target group at the national level in order to gather and analyse their valuable feedback regarding this result.

Empowering innovation in STE(A)M
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3.1   Validation exercises in Portugal

To conduct the validation exercises of the second Intellectual Output in Portugal, INOVA+ disseminated the Gamified Mediator and the validation questionnaire through the target group in Portugal in order to reach their feedback. The dissemination started in May 2022 and different approaches and channels were used:
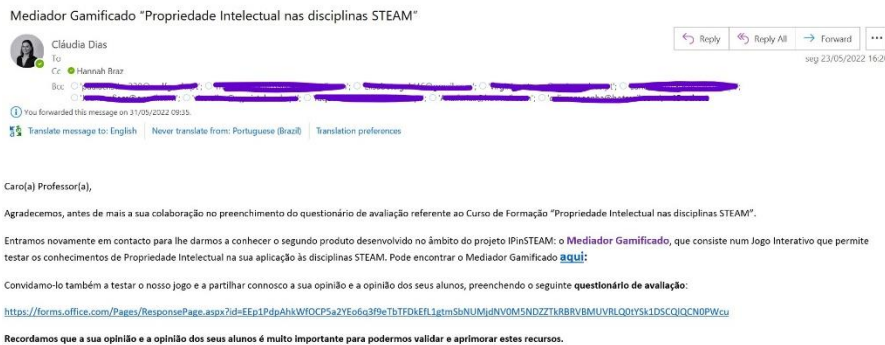
1.   Dissemination through INOVA+ newsletter:
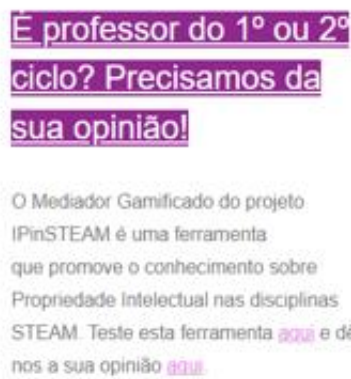
2.   Dissemination in face-to-face events of different projects:

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through IP awareness
2020-1-UK01-KA201-078934

3. Dissemination through email to relevant stakeholders, including the teachers that participated in the validation exercises of Intellectual Output 1:


The validation exercises took place between May 2022 and 1st of July 2022 and INOVA+ managed to reach a total of 38 participants, comprised of 10 teachers and 28 students.
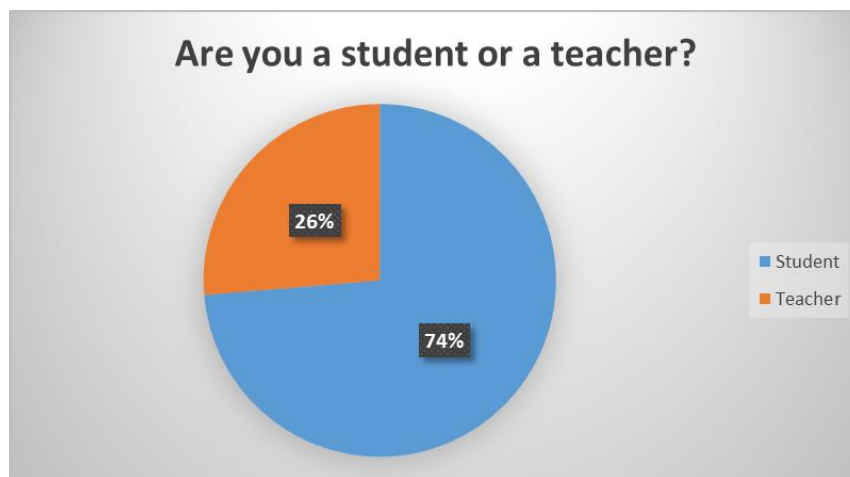
For this report's purposes, the results retrieved from the questionnaires for teachers and the questionnaires for students will be analysed separately, in order to assure a more accurate and detailed report of the findings.

Empowering innovation in STE(A)M
through IP awareness
2020-1-UK01-KA201-078934

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3.1.1 Questionnaire for teachers: results and analysis

Teachers were invited to rate some statements regarding the Gamified Mediator. The results showed an overall positive feedback from the teachers. All the statements were rated by at least 80% of the teachers with "*agree*" or "*completely agree*", as shown in the graphic below:
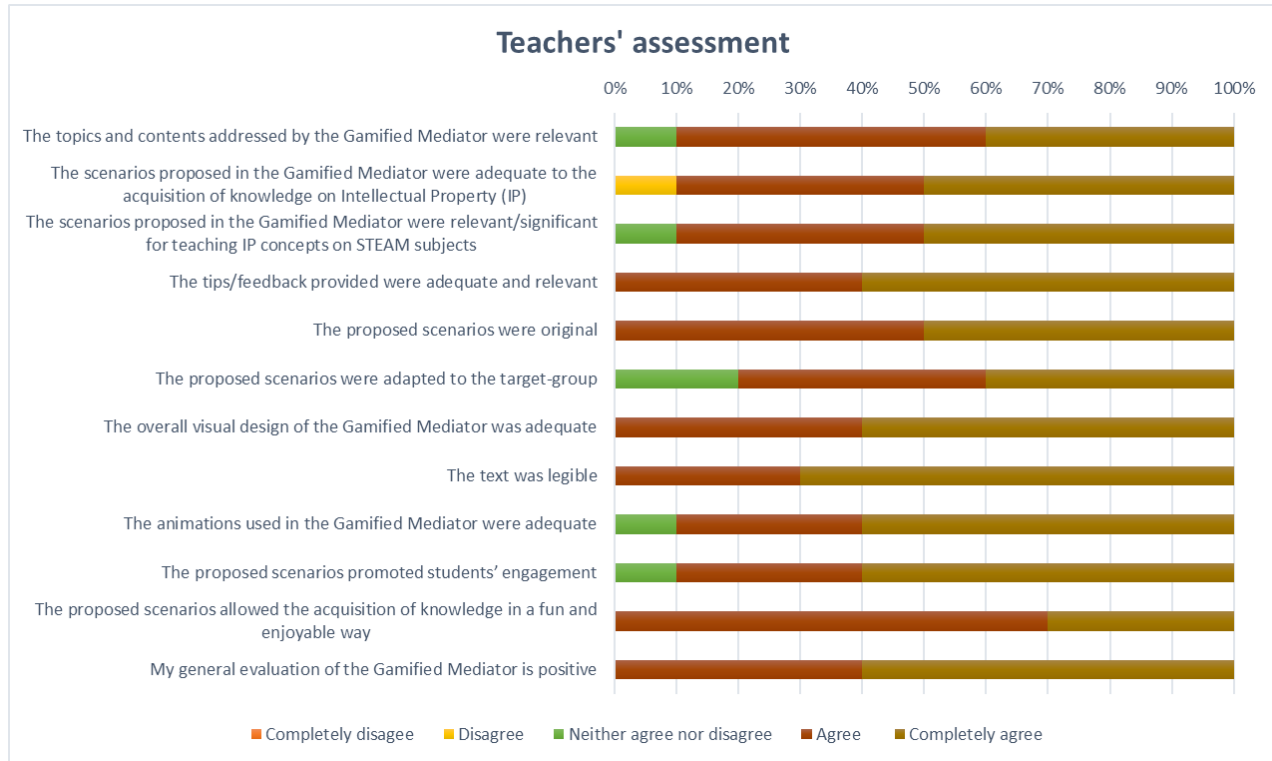

The statement regarding the adequateness of the Gamified Mediator to the acquisition of knowledge on IP was, however, rated as "*disagree*" by one teacher (10%).

Based on the results retrieved from the answers of the teachers, it is possible to conclude that the Gamified Mediator presents relevant and original content, an adequate design, is relevant for teaching IP concepts and presents an overall high quality.

When asked for additional comments, teachers highlighted the innovative, interesting and dynamic aspects of the Gamified Mediator, and referred that "*the graphics and animations are very suitable for the attractiveness of the content*". Additionally, one teacher called attention to that one question and the response options from the Robotics subject needed to be rephrased in order to reach higher clarity.

Empowering innovation in STE(A)M
through IP awareness
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3.1.2 Questionnaire for students: results and analysis

Students were also invited to rate some statements regarding the Gamified Mediator. The results showed an overall positive feedback from the students. All the statements were rated by more than 90% of the students with "*agree*" or "*completely agree*", as shown in the graphic below:
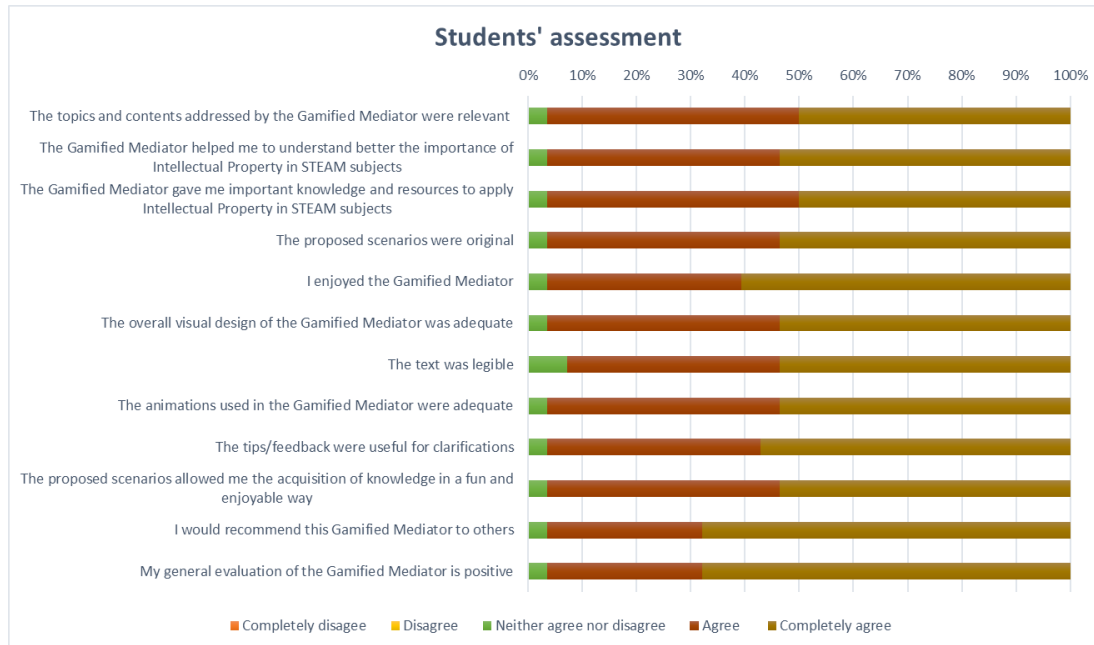
Based on the results retrieved from the answers of the students, it is possible to conclude that the Gamified Mediator presents relevant and original content, an adequate design, is relevant for learning IP concepts and presents an overall high-quality.

When asked for additional comments, students expressed their enthusiasm with the Gamified Mediator, referring that they enjoyed testing the tool.

In sum, for the validation exercises of the second Intellectual Output of the IPinSTEAM project: the IPinSTEAM Gamified Mediator, INOVA+ collected, in Portugal, the feedback of 38 participants (10 teachers and 28 students) from the target group. The target was to engage 25 participants (20 teachers and 5 students) to validate the project outcomes. However, INOVA+ reached 38 participants, comprised of only 10 teachers and 28 students, despite all the dissemination efforts.

The overall feedback was positive both from the teachers and from the students, which suggests that the Gamified Mediator presents good quality and may be used further in the school context to enhance understanding of IP strategies in STEAM subjects through gamified learning.

Empowering innovation in STE(A)M
through IP awareness
2020-1-UK01-KA201-078934

The positive feedback presented by the teachers and the students in the Portuguese school context is a very important finding for validating the second Intellectual Output of the project: the IPinSTEAM Gamified Mediator.

4.   References

Please use APA Style to write down your references.