



FINAL TRANSNATIONAL EXPLOITATION REPORT

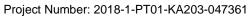




Project Applicant: Istituto Politecnico Do Braganca (PT) with the technical support of Pixel (IT)

> **Period: 1 September 2018 – 31 August 2021** Report produced by: Pixel (IT)

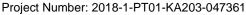






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Introduction

The exploitation strategy was elaborated by the project applicant, Istituto Politecnico Do Braganca (PT), with the support of Pixel.

The Exploitation strategy was presented kick off meeting during the first project's meeting. Revisions where applied in order to fully adapt it to the project needs and partners characteristic and then jointly adopted by the partnership.

The Exploitation strategy was fully implemented with the active contribution of all the project partners with the purpose of improving the impact of the project on its target groups and to make the project results accessible for highest number of potential beneficiaries both during the project life cycle and for the longest period after the project conclusion.

Exploitation strategy

The purpose of the exploitation activity is to improve the impact of the project on its identified target groups and at the same time to promote the project sustainability.

The exploitation strategy was based on the following steps:

1) Selection of products to be exploited

They were identified as the main project outcomes collected on the project portal (please see below)

2) Identification of target groups of exploitation

The main project target groups are: Math Lecturers, Math Students at university level and Policy makers in the field of education.

3) Identification of main exploitation actions to be carried out

The identified actions included:

- Promotion of the visibility of the project's results.
- Involvement of new actors. For this activity each partner was asked to involve other bodies at national level beyond those already involved in the project. These bodies were asked to be involved as associated partners so as to promote the use of the project outcomes to their end users. The associated partners were also asked to publish the information on their newsletters and to put a link to the project web site on their portal.





- Analysis of the impact of the project deliverables on the target groups focusing on how they directly benefited from its outcomes.
- Actions aiming at the project's sustainability
- Publication of articles and web articles
- Organisation of Multiplier Events
- Participation in conferences/fairs

4) Analysis of the results achieved

An evaluation of the exploitation activities has been carried out.

Products to be exploited

The products that have been exploited are the project outputs produced during the project life time and that made available on the MathE project portal (https://mathe.pixel-online.org/index.php).

To ensure a good exploitation of the project outputs all the deliverables and results produced are made available on the project portal and organised so to ensure full accessibility and usability of the contents by the target groups.

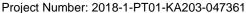
The deliverables are accessible without any limitation to the public directly online through dedicated Portal's sections providing a description of the contents and outlining suggestions on how to use them in teaching environments.

Definition of the Target Groups

The main target groups of the exploitation action have been identified in:

- Math Lecturers
- Math Students at university level
- Policy makers in the field of education







Exploitation Activities Carried Out

Promotion of the visibility of the project's results

The activity aiming at the promotion of the project's visibility included:

- Publication of articles and web articles on relevant newspapers and insertion of links towards the project web site on education related web sites
- **Organization of Multiplier Events**
- Participation in Conference and fairs

The project partners made direct contacts with media specialized in education whose were sent press reviews and information about the project activities and results.

As a result of this activity 43 articles, media announcements, exchange links and social media advertising about the project were published both on line and on paper reporting the project's results.

The list of articles, web articles and web sites that made direct links to the MathE portal is available on the Exploitation section of the project portal (https://mathe.pixel-online.org/press review.php).

The partners organized specific national events (Multiplier Events) aiming at increasing the numbers of teachers using the project intellectual output and becoming hubs for other teachers and therefore guarantee the sustainability of the project. For each multiplier event the following information has been provided: description of the event, list of participants, signatures, programme and pictures.

Around 250 among lecturers, students and policy makers participated in the Multiplier Events (https://mathe.pixel-online.org/conferences.php).







Involvement of stakeholders and new actors

This activity aimed at the involvement of new actors for the promotion of the impact of the project on its target groups.

As far as participants and target groups are concerned in the Application Form they were identified in:

- Math Lecturers
- Math Students at university level
- Policy Makers in the Field of Education

As foreseen a consistent number of representatives of each of these four main target groups have directly participated in the project activities, contributed to the creation of the Outputs and benefited from them.

A total number of 72 institutions, 79 lecturers, and 954 students are involved in the project and contributed to the achievements of the project activities.

The number of involved in institutions includes the 7 contractual partners, 23 associated partners that support the projects and contributed to its dissemination and 41 institutions that registered on the project portal to provide their lecturers, teachers and students to benefit from the project intellectual outputs.

Associated partners joined the project signing a letter of involvement confirming that they share the project objectives and recognize the strategic importance of its results. They had complete access to all the projects results and, consequently, the possibility to use them with their network.

The complete information about these institutions is available at: https://mathe.pixelonline.org/partnership-ass.php

The geographical distribution and the names of the organization that registered on the portal are available at https://mathe.pixel-online.org/CM_community.php.

All the registered lecturers belong to the above-mentioned organization and their involvement is a crucial element to the achievement of the project objective as the support to the students in identifying and filling their gaps in Math knowledge.

All lecturers can contribute to the database of:

- questions for the self-assessment
- questions for the final assessment
- reviews of already existing video lessons



- new video lessons
- teaching material

They also can participate in the communities of practices.

Consequently, all students can make use of the self-assessment tool and receive suggestions on videos and teaching materials related to the questions they were not able to answer correctly.

The involvement of the representatives of the target groups was also relevant because they were periodically asked for formal and informal feedback about the platform functionalities and suggestions for their improvement. Working based on a constant improvement approach allowed the partnership to have, at the end of the project, a fully functional portal.

Being the deliverables of the MathE project freely accessible and under the Creative Commons Licence, new universities and schools will be able to join the network as associated partners and register on the platform allowing their members to benefit from the project results and to constantly contribute to their enrichment.

The successful impact of the project was indeed ensured by the strong connection that the project partners have with the educational system of their local and regional territory and with the public bodies in charge of regional and national educational policies.

All intellectual outputs impacted the partnership's working methods and, as a consequence, on the target groups of the partners. In particular:

- IPB (PT) (SE), University of Genova (IT), KTU (LT), TUIIASI (RO) and LIT (IE), as Higher Education Institutions, could present the project results to all their lecturers and students.
- Pixel (IT) and EuroED (RO), as a teacher training centre, had the possibility to presents the project results to all the teachers participating in their training activities.

Starting from this solid network the project partners committed themselves to implement, throughout the project, an intense and capillary dissemination and exploitation strategies (further described here below) aiming to multiply, mainstream and sustain the project impact described above.





Results of the Exploitation Activities

Articles, Social Media, Web and Publications

Almost 43 among newspapers, online Media and Websites dedicated a page and a direct link to the MathE portal. This contribution is very relevant to increase the project visibility with its target users because the web sites listed below are specifically addressed to them.

Please find below the list of activated exploitation links:



Pixel's twitter profile

During the 11th edition of the Future of Education, International Conference held online (on a highly interactive e-Platform) on 1-2 July 2021, Elisabetta Delle Donne presented the MathE project describing the project aims and activities. The tweet provides a direct link to the project portal then all the users (partners, lecturers, associated partners and people interested in the project) may now learn about and benefit from the MathE project



Scholars-Mathematics for All - Facebook group

The group Scholars-Mathematics for All provides a platform for young mathematicians to discuss their mathematical problems, to explore new books, to know upcoming projects, conferences and workshops. It has more than 1900 viewers. And in this journey, the learning and teaching mathematics is pursued. So, the MathE project is for interest for this group.



Faculty of Electrical Engineering - website

The Faculty of Electrical Engineering, Technical University "Gheorghe Asachi" of Iasi, is a prestigious faculty that was founded in 1910. With an employment rate of over 90%, with solid accumulated knowledge in the field of information technology, strong or weak currents, as well as economic management, the graduated students are required in industry and research throughout the European Union. The details of MathE project and the link of the MathE platform are presented



Facultatea de Electronică, Telecomunicații și Tehnologia Informației, Iași -Facebook Group

This is the Facebook group of students and teachers from the Faculty of Electronics, Telecommunications and Information Technology, Technical University "Gheorghe Asachi" of lasi. The group on Facebook has over 2000 active members. The MathE project has been distributed among the students and teachers network.



Differential Geometry and Its Applications - Facebook group

This is a group of mathematician's community focused on the applications and theory of differential geometry. The Facebook Page is an online community of over 9500 permanent viewers. The members can access information about MathE project (news, events, photos from the activities, etc.)



TUIASI-Dept.of Mathematics and Informatics website

Department of Mathematics and Informatics from "Gheorghe Asachi" Technical University is partner in the MathE project. The website of Dept.of Mathematics and Informatics provides information about the project together with the direct link to the Portal for academic community.



Liceo Classico Scientifico & Sportivo Statale "M. L. King"

The Liceo was born in the sixties as the "Third Scientific High School". In the school year 69/70 was transformed into an autonomous high school, assuming the name of 3rd State Scientific High School and in the 70/71 school year it changed its name to Liceo Scientifico Martin Luther King Luther King. On the web page of the instituion is available a link to the project portal. All the students, the teachers, the staff of the school, and the users who visit the school website may now learn about and benefit from the MathE project







DIMA

DIMA is the departmen of mathematatics and statiscs of the University of Genova. DIMA offers two bachelor's degree programs (in mathematics and statistics), one master's degree program and two doctoral programs. On the web page of the instituion is available a link to the project portal so all students, teachers, staff of the university, and all users who visit the university website may now learn about and benefit from the MathE project.



Liceo Armaldi Novi Ligure

Liceo Scientifico Statale of Novi Ligure, established in the 1968/69 school year as a detached section of the Liceo Scientifico Statale "G. Galilei" of Alessandria, obtained administrative autonomy in the 1972/73 school year. In 1994 it was named after Edoardo Amaldi. On the web page of the instituion is available a link to the project portal. All the students, the teachers, the staff of the school, and the users who visit the school website may now learn about and benefit from the MathE project.



LIT Development Unit Facebook page

LIT is partner in the MathE project. The Development Unit has a Facebook link to the MathE project. Itaround 150 followers) of the institution is available a link to the project portal then all the users may now learn about and benefit from the MathE project.



LIT Development Unit

LIT is partner in the MathE project. The Development Unit has a dedicated page to the MathE project. The Development Unit website provides information about the project together with a direct link to the Portal. There are many external users of LIT's Development Unit website.



LIT Applied Science Facebook page

LIT is partner in the MathE project. The Facebook page provides information about the project together with a direct link to the Portal. There are over 700 followers of the Applied Science Facebook page and its archive that may now learn about and benefit from the MathE project.



Liceo Scientifico Enrico Fermi

Liceo Scientifico Enrico Fermi is partner in the MathE project. Liceo Scientifico Enrico Fermi website provides information about the project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.



University of Genova - Emanuela De Negri

A direct link to the project portal is available from Emanuela De Negri's web page on the web site of the University of Genova. She works in the University of Genova and in her personal section she has a direct link to the Fiction project portal. All students, teachers and staff of the university, and all users who visit the university website may now learn about and benefit from the MathE project.



Mathematics

Facebook Community about Mathematics. 338.093 people are following the Community posts. On the Social Media page is available a link to the project portal then all the users may now learn about and benefit from the MathE project.



Mathematics ++ @maths.everyday

Facebook Community about Mathematics. 29.299 people are following the Community posts. On the Social Media page is available a link to the project portal then all the users may now learn about and benefit from the MathE project.







Teachers Closed Group on Facebook

Teachers group on Facebook has over 38.000 members all over the world. It is a safe place for teachers where they can share ideas and experiences. The MathE project has been distributed among the teachers' network

On the FB group of the association is available a link to the project portal then all the users may now learn about and benefit from the MathE project.



GoScience

The aim of the GoScience project is to promote studetns' creativity with the aim of making scientific knowledge better understandable and increase their functional literacy in STEM subjects. On the web page of the instituion is available a link to the project portal then all the users may now learn about and benefit from the MathE project.



University of Genoa

The University of Genoa is one of the most valuable cultural and scientific heritage of the Mediterranean and the Italian north-western area. It is deeply interconnected with the city of Genoa and its economic framework. A link to the MathE project is available on the website of University of Genova. Many students and lecturers visit daily the web site then all the users who visit the university website may now learn about and benefit from the MathE project.



Società Dante Alighieri Wroclaw Poland

The Società Dante Alighieri Wroclaw Poland website provides direct link to the MATHE portal. There are many users of Dante's website that may now learn about and benefit from the MathE project.



Cattedra UNESCO in "Anthropology of Health. Biosphere and healing systems

The Cattedra UNESCO in "Anthropology of Health. Biosphere and healing systems" is partner in the MATHE project. The Cattedra UNESCO website provides direct link to the MATHE portal. All website visitors from around the world may now learn about the MATHE project.



MathE YouTube account

The biggest and world spread video platform, YouTube, includes an account dedicated to the MathE project where video materials created within the projects are uploaded. The video uploaded includes also a link to the project portal, this way the Youtube subscribers and viewers can interconnect and earn about and benefit from the MathE project.



EuroEd LinkedIn profile

LinkedIn Corporation is a social networking website for people in professional occupations Founded in December 2002 and launched on May 5, 2003 it is mainly used for professional networking. LinkedIn reports more than 200 million acquired users in more than 200 countries and territories. On the EuroEd account, the MathE project has been distributed among the network. On the Social Media page of the instituion is available a link to the project portal then all the users may now learn about and benefit from the MathE project.



EuroEd Twitter account

Twitter is an online social networking service and microblogging service that enables its users to send and read text-based messages on various subjects. Creating a very complex network, you can use Twitter for sharing and disseminating projects. The MathE project have been shared ensuring this way its visibility also to other countries. On the Social Media page (which counts around 150 followers) of the instituion is available a link to the project portal then all the users may now learn about and benefit from the MathE project.







EuroEd Facebook page

EuroEd Facebook Page is an online community of over 2500 permanent viewers. The people interested in the activities carried out by EuroEd can access the institutional Facebook page and can read about the projects, including MathE project (info about the project, news, events, photos from the activities, etc.). Also, on the official EuroEd Facebook Page, visitors can find a direct link to the project portal, photo album dedicated to the MathE project, share ideas about the project and connect with others to ensure the visibility of the project and to collect feedback and suggestions from other countries



EuroEd website

EuroEd is a partner in the MathE project. The EuroEd website provides information about the project together with a direct link to the Portal. There are many users of EuroEd's website that may now learn about and benefit from the MathE project



LIT News Website

LIT is partner in the MathE project. LIT The news website provides information about the project together with a direct link to the Portal. There are many users of The News website and its archive that may now learn about and benefit from the MathE project.



Instituto Politécnico de Bragança

Instituto Politécnico de Bragança is the coordinator of the MathE project. The website provides information about the project together with a direct link to the Portal. There are many users of the IPB's website (students, lecturers and all the website's visitors) that may now learn about and benefit from the MathE project.



EureKit - Mathematical Games project

The EureKit – Mathematical Games project mission is to promote Mathematics in an entertaining and attractive way. Its Facebook page, which counts almost 300 followers, provides information about the project and contains a direct link to the MathE project's website then all the users may now learn about and benefit from the MathE project.



Research Centre in Digitalization and Intelligent Robotics (CeDRI)

The Research Centre in Digitalization and Intelligent Robotics (CeDRI) is an applied interdisciplinar research unit that clusters together active researchers from the fields of Electronics, Computer Science and Mathematics. There are many users of the CeDRI's website that may now learn about and benefit from the MathE project.



LIT Development Website

LIT is partner in the MathE project. LIT Development Unit website provides information about the project together with a direct link to the Portal. There are many users of The Development Unit website that may now learn about and benefit from the MathE project.



Do Well Science Project

The Do Well Science project is funded by the European Commission through the Italian National Agency for the Erasmus+ Programme with the aims to increase secondary students' achievements in science subjects. The project website provides information about the MathE project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.



SMiLD Project - Focus on Students with Mathematics Learning Disabilities

The SMiLD project is funded by the European Commission through the Italian National Agency for the Erasmus+ Programme. The assumption is that learning difficulties in mathematics do not often occur with clarity and simplicity. They manifest themselves differently in different people, and are often left undiagnosed. Therefore the project aims at promoting the acquisition of skills and key competences with a specific focus on addressing underachievement in maths. The project website provides information about the MathE project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.









Fiction - Functional ICT Instruction On the Net

The Fiction project is funded by the European Commission through the Swedish Council for Higher Education with the aim of enhancing teachers' knowledge to teach students to use digital tools for their own understanding of science.



Kaunas University of Technology

Kaunas University of Technology is partner in the MathE project. KTU website provides information about the project together with a direct link to the Portal. There are many users of KTU website that may now learn about and benefit from the MathE project.



LieDM association - Lithuanian

Lithuanian Association of Distance and e-Learning (LieDM) - is a volunteer organization which unites all Lithuanian science, study, and educational institutions which implement distance teaching and learning. The association's website provides information about the project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.



KTU - Faculty of Mathematics

KTU - Faculty of Mathematics, is partner in the MathE project. KTU website provides information about the project together with a direct link to the Portal. There are many users of KTU website that may now learn about and benefit from the MathE project.



VšI Emundus

Public institution "eMundus" was established in 2009 in order to streamline research and implementation activities in the area of education and the use and adaptation of information and communication technologies in different spheres. Since the beginning of 2012 the vision was supplemented taking very important aspect for the society development - cultural and healthy lifestyle promotion. The eMundus' website provides information about the project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.



LieDM association - English

Lithuanian Association of Distance and e-Learning (LieDM) – is a volunteer organization which unites all Lithuanian science, study, and education institutions which implement distance teaching and learning. The association's website provides information about the project together with a direct link to the Portal. There are many users of the website that may now learn about and benefit from the MathE project.



KTU - Faculty of Informatics

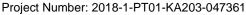
KTU - Faculty of Informatics, is partner in the MathE project, KTU website provides information about the project together with a direct link to the Portal. There are many users of KTU website that may now learn about and benefit from the MathE project



Pixel

Pixel is partner in the MathE project. Pixel website provides information about the project together with a direct link to the Portal. Users from Universities, Associations, Public bodies, Training Agencies, Schools, participants in the International Conferences on Education and people interested in the seminars/masters visit Pixel website (estimated visits are around 12.000 users each year). They may now learn about and benefit from the MathE project







Involvement of new actors

The project partners had the task to involve at least 25 Lecturers and 100 students. Actually this initial goal was widely exceeded (https://mathe.pixel-online.org/PRTN_lecturers.php).

A total number of 72 institutions, 79 lecturers, and 954 students are involved in the project and contributed to the achievements of the project activities.

Universities, thanks to the involvement in the project and the use of the intellectual outputs during the project life time, benefited from the cooperation among students and lecturers that allowed reinforcing of students Math skills and enhanced students' motivation through the implementation of an innovative educational approach.

It must be underlined that the Portal is specifically designed to allow constant updating of the contents, allowing for further enrichment of Intellectual Outputs.

It must be also underlined that the contractual partners are all working in the educational field daily, and have as their main mission the support university students in their learning path.

The characteristics of the project partners also guarantee a high multiplier effect on a broader level.

All partners have a strong and consistent experience in the promotion and implementation of innovative teaching and learning methods.

The project results then will be constantly be used by the project partners in their activities and spread to all the members of the past, present and future partnerships.

Further elements that ensure the strong sustainability of the project are:

- The direct involvement of the stakeholders in the design, creation and implementation of the project results. As mentioned above, both lecturers and students played an active role in creating, testing and evaluating the contents of the Intellectual Outputs.

This ensures that the final results produced, all available for free and accessible on the MathE portal, have been created according to the real needs of the relevant future end users and therefore provide them with highly operative, easy to use and effective tools to be implemented in the everyday activities.

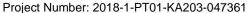
Also, the involved students and lecturers can play an important role as multipliers, ensuring, after the end of the project, not only that the results are continued to be used, but also mainstreamed in the univeristies in which they operate spreading the information to colleagues.

- Promotion of the visibility of the project's results. The project partners made direct contacts with European media and websites specialized in education. As a result of this activity, articles about the project were published reporting the project's results direct links to the mathE portal were made available. The list of websites that made direct links to the MathE portal is available on the dedicated links section of the project portal itself at https://mathe.pixel-online.org/press_review.php.
- The associated partners share the project objectives and are interested in being involved in the project activities and in accessing and sharing the project results. They are committed to further promote the project outcomes with their target users. The associated partners were also asked to publish the information on their newsletters and to put a link to the project website on their portal.

For the complete list of associated partners please see https://mathe.pixel-online.org/partnershipass.php.









The associated partners share the project objectives and are interested in being involved in the project activities and in accessing and sharing the project results. They are committed to further promote the project outcomes with their target users. The associated partners were also asked to publish the information on their newsletters and to put a link to the project web site on their portal.

A total number of 25 organisations (https://mathe.pixel-online.org/partnership-ass.php) interested in scientific education have joined the project as associated partners by signing a letter stating that they share the project objectives and recognize the strategic importance of its results.

The associated partners include Universities, Third Level Higher Educational Institutes, Public schools, Higher Education Institutes, High Schools, No-profit Associations, Research Centers, Science Museums, Non-academic institutions and Educational centres.

The associated partners committed themselves to contribute to the dissemination, exploitation and sustainability of the project through their network of contacts. Associated partners have now complete access to the project intellectual outputs and can therefore promote their use to their affiliates and modify their working methods.

The associated partners are:

Name	Type of Institution	Country
Alexandru Ioan Cuza University of Iasi	University	Romania
Athlone Institute of Technology	Third Level Higher Educational Institute	Ireland
Colegiul National de Arta "Octav Bancila", Iasi	Public school	România
EPI*STEM	National Centre for STEM Education	Ireland
Faculty of Economics and Business Administration, lasi	Education	Romania
Faculty of Mathematics	Education	Romania
Institute of Technology Carlow	Higher Education Institute	Ireland
Ion Ionescu de la Brad University of Agricultural Sciences and	Higher education institution	Romania
Veterinary Medicine from Iasi	(tertiary level)	
Liceo M.L.King	Classic, Scientific and Sport High School	Italy
Liceo Nicoloso Da Vigo	Scientific, Classic, Linguistic High school	Italy
Liceo Scientifico Enrico Fermi - Genova	High School	Italy
Liceo Statale "E. Amaldi"	High School	Italy
Liceul Teoretic de Informatica "Grigore Moisil"	Highschool	Romania
Liceul Teoretic Vasile Alecsandri	High School	Romania
Lithuanian Association of Distance and e-Learning (LieDM Association)	Association	Lithuania
MathFitness	No-profit Association	Italy





Research Centre in Digitalization and Intelligent Robotics	Research Center	Portugal
Science Centre of Bragança	Science Museum	Portugal
Società Dante Alighieri	Non academic institution	Poland
The Romanian Association for Quality Language Services QUEST Romania	Association	Romania
University of Chemistry and Technology Prague	University	Czeck Republic
University of Limerick Mathematics Learning Centre	University	Irealnd
VšI "eMundus"	Public institution	Lithuania
VšI "Traku švietimo centras"	Educational centre	Lithuania
Waterford Institute of Technology	Higher Education and Research	Ireland