



Welcome Message

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Dear readers,

We are happy to present to you the first issue of the RENEWTEACH newsletter. This newsletter has been prepared to inform you, dear readers, about the purpose of the RENEWTEACH project, the project's results and activities that might be of interest to you, and the topic of Renewable Energy (RE). Specifically in this issue, you can find a detailed presentation of our project, the expected results, and a special focus on Renewable Energy.

We believe that Renewable Energy is a solution for climate change, for decreasing pollution, and for improving the health of our planet. We can get more benefit of RE through education, raising the level of awareness on this issue, and by using teacher candidates as transmitters. They will benefit from a curriculum built by the RENEWTEACH project and together with training materials and best practices will have a widespread impact on the teaching practices of pre-service teachers. We are expecting the transformation in their professional lives to spread to different groups (peers, parents, etc.) via students and raising awareness about renewable energy.

Thanks to the industry-field partnership, the Renewteach project will create synergies between different segments such as NGO, teachers, academics and policy makers.

In this newsletter you will also find contact information about the representative from each participant institution who are acting as an ambassador of the project. We kindly invite you to write to us, to follow us on social media or to join us in the community of people interested in change!

01 Development of Curriculum and Training Program for Preservice Teachers

Within the scope of PR1, content will be created in which STEM skills are addressed in the context of RE to develop the "STE(A)M" based RE curriculum. The needs analysis conducted in this context shows that there is a certain lack of curricula related to RE in higher education both in Türkiye and in European countries. At the higher education level, there is a need for a special curriculum that will develop students' knowledge and skills in renewable energy education and focus on their thinking skills.

In this context, the emphasis of the curriculum development process followed within the scope of PR1 will be placed on:

- the adoption of a bottom-up philosophy rather than a top-down approach. In this respect, the curriculum being developed is completely innovative;
- interviews with field experts and themes specified in the literature are targeted. In this way, it will be easier for teacher candidates to adopt the program;
- innovative and interdisciplinary learning skills from STEM thinking skills are encouraged.

02 Development of Multimedia Based Online Learning Content and Material

PR2 is based on meeting the needs specified in PR1. In short, the most important need for PR2 is its complement to PR1. Thanks to the curriculum (PR1) developed in the context of RE based on STEAM and the Multimedia Based Online Learning Content and Material (PR2) which includes the application practices of this curriculum, preservice teachers (PST) will have a new curriculum.

Learning materials will qualify as tools that enable STEAM integration in RE through innovative pedagogies such as hands-on minds-on, inquiry-based learning etc. In accordance with the themes in the curriculum (PR1) a learning and teaching framework will be prepared that includes cognitive, affective and talented achievements. This learning and teaching framework will serve as a guide regarding which outcome (cognitive, effective, skilful) is to be gained via which learning material. The learning materials will be designed according to the guide produced as a result of learning and teaching framework.

Digital design activities, such as animations and simulations, will be presented to preservice teachers on a digital platform. . For example, design-type activities showing the user the parts of a wind turbine combined in an animated environment will be included in this result.

03 Development of Assessment Tool for Preservice Teachers

The aim of this project result is to develop a reflective assessment tool, which will evaluate both knowledge and skills of preservice teachers, as well as revealing the development of their attitudes and values regarding renewable energy.

This will allow us and relevant stakeholders to assess, measure, and monitor the progress of preservice teachers using our curriculum and training program. It will also, due to the interdisciplinary nature of the tool, contribute to interdisciplinary questions related to renewable energy and contribute to developing the reflective writing skills of preservice teachers.

04 Development of Online Platform Content, Best Practices Pool

Teacher candidates will have access to all project outputs such as curriculum, learning materials, self-assessment tool, etc. through the online platform. Likewise, PSTs can use their experience and knowledge about all PRs globally and locally. In line with this requirement, a case pool will be developed where experience, knowledge and solution suggestions are shared on the online portal.

The fact that the online portal will be digital will also contribute to digital competencies of project participants. Besides the participants, external users also need to have access to Renewteach project results.

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Mehmet Demirbağ is a PhD graduate in science education. Since 2013, he has been working at Uludağ University, Faculty of Education, Department of Science Teaching. His main areas of study are argumentation, modal descriptions and teacher belief systems. He worked as a scholar and researcher in many national and international projects. He teaches undergraduate and graduate level courses such as argumentation-based science teaching, epistemological beliefs, scientific research methods and science laboratory. Lately, he has conducted a study modelling the intentions and risk perceptions for the use of renewable energy sources.

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Mutlu Tahsin ÜSTÜNDAĞ is a PhD graduate in Education Technology. He is currently working at Gazi University Computer Education and Instructional Technologies Department. He has also been working as director of the Gazi University Distance Education Application and Research Center since 2020. His areas of interest are distance education, teacher training, blockchain, web3 technologies, implementation of ICTs in education and instructional design. He gives lectures on algorithms, data structures, visual programming, rapid application development in education and business, internet programming, database management, project management and ICT utilization in education.

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Anișoara Dumitrache, PhD, is university lecturer at the Faculty of Psychology and Educational Sciences, University of Bucharest. She teaches ICT related disciplines for “ICT in education” Master programme, and Bachelor degree, and has more than fifteen years of experience in distance learning. She is the founding member of Center for Research and Promoting Equity in Education. Her research interest include: distance learning, educational platforms, Game Based Learning, Open Educational Resources & Practices, and Google Educational products. Her research activity includes articles and studies published in specialized journals.

MEET OUR TEAM

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Tadej Todorović is a teaching assistant at Faculty of Arts, University of Maribor, where he also obtained his master's degree in Philosophy and English Language. He is currently employed at the International Centre for Ecoremediations at the Faculty of Arts of the University of Maribor.

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Industrial Engineer specialized in automation and electronics, with more than five years of experience in management of R&D project for different sectors of both industrial and training areas. As R&D consultant, Sonia has experience in the management of National and European R&D projects, collaboration in the identification of technical and non-technical competences needed in the future jobs to respond to the digital transformation, organization and development of different training programs in technological areas management and implementation of Innovation Management Systems (UNE 166002), Project Management, and Data Bases management and analysis.

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Dr. Oya GÜLER is project coordinator at the Research and Development department (OMEM) where she is being responsible for the financial supervision of Erasmus projects. She has a PhD degree in social sciences and is carrying out an Erasmus+ KA220 project as a coordinator and contact person.

Impact of the Project

(participants, organizations, target groups, relevant stakeholders)

The project results of the Renewteach project are expected to impact various organisations, target groups, and stakeholders.

First of all, we expect to directly impact the organisations involved in the project, most of which are higher education institutions that will therefore have direct access to project results. They will have the opportunity to integrate the advanced curriculum into existing STEAM education programmes as either a new non-obligatory course or as an essential one.

Our two main target-groups are the preservice (science and elementary school) teachers, who will be involved in the project and who will use the freely available project results, and the pupils in elementary and secondary schools, who will be the benefactors of the knowledge given to preservice teachers.

Moreover, the experience gained throughout the project will be shared with relevant stakeholders, such as policymakers in partners' counties and at the European level; the results can be used for coordinating policies for inventive RE systems learning approaches and the project outcomes can be used to experiment with RE-based materials in different classroom environments as examples of guidance of evidence-based effective technology usages to enhance STEM accomplishment.

Project Meetings

Bursa, Türkiye Kick of meeting, 26-27 of May 2022

The RENEWTEACH kick of meeting took place in Bursa, Türkiye. All partners had attending representatives. The meeting enabled us to establish a detailed work plan, as well as all the activities to be conducted within the project. Moreover, all relevant administrative issues were clarified.

Pamplona, Spain 2nd meeting, October 2022

The RENEWTEACH second meeting will be in October 2022, in Spain, organized by the Association of Navarre's Industry. The consortium will discuss the further steps of the project.



Special Focus on Renewable Energy and STEAM

As is well-known, climate change and environmental degradation have become a threat to the EU and the entire world. According to the EU European Green Deal, countries have turned to policies that prioritize clean and renewable energy to cope with this threat.

Renewable energy (RE) is energy gathered from renewable resources that are naturally replenished on a human timescale. These are means of clean and endless energy. All sources of renewable energy, such as solar energy, wind energy, ocean energy, hydropower, bioenergy, and thermal power, have the ability to produce energy from natural resources that are renewed faster than they are consumed. They differ from fossil fuels mainly in their diversity, abundance, and potential for use anywhere on earth, but above all in that, they produce neither greenhouse gas emissions – which cause climate change – nor contaminating emissions.

Why is Renewable Energy important

All human activities impact our environment, and renewable energy is no exception. However, the advantages over the destructive impacts of fossil fuels, are undeniable: from decrease in water and land use, less air and water pollution, less wildlife and habitat damage, to lower or no greenhouse gas emissions.

Reasons why RE are so important:

- Renewable energy emits no or low greenhouse gases and air pollutants.
- Renewable energy comes with low costs.
- Renewable energy creates jobs.
- Renewable energy is accessible to all.
- Renewable energy is secure.
- Renewable energy is democratic.

Although policies for the use of RE resources have been defined and large investments have been made, one of the main drivers of the use of such innovations is public acceptance (Liarakou, Gavrilakis, & Flouri, 2009). In this context, it is extremely important to educate all segments of the public and gain positive attitude and knowledge towards RE. It is very important to raise awareness of future generations to consume energy resources conscientiously.



Why Is It So Important to Support STEM Education?

The subject of RE is one that includes both the science and engineering disciplines and that, by its own nature, encompasses the STEAM disciplines. Ensuring the efficiency of the energy produced by renewable energy sources is possible only by having an advanced knowledge in the fields of science, technology, engineering, and mathematics (STEAM) and using them in a complementary manner. Therefore, renewable energy and STEM are two subjects that are intertwined by their very nature. With a curriculum that considers these together, learners can, on the one hand, develop their STEAM skills, and gain positive attitudes, knowledge and skills regarding renewable energy sources on the other. In this way, learners will understand how multi-disciplinary approaches are integrated with each other and cross-cut processes (STEAM thinking, risk analysis) in STEAM-based RE practices.

Another challenge is whether renewable energies will create more STEM jobs than fossil-based energy does. In this respect, STEM education is essential for the future generation of students to survive in the world of today. The rate of youths who decide to study a STEM-related bachelor's is very low. In several countries, this is a concern, so policymakers are focusing their efforts on encouraging the youth to study STEM bachelors.

To address this, starting from today, the adoption of sustainable development awareness should be ensured in every part of the society. It is primarily the duty of teachers to sensitize the society on this issue. It is possible to cause a change in the behavior of the society by developing awareness of individual and collective responsibility through education.

Our future depends on it.

RENEWTEACH in a Nutshell

About the Project

RENEWTEACH - "Developing Competences of Pre-Service Teachers through STE(A)M-based Renewable Energy Curriculum" is a European project with the main aim of developing a curriculum on the subject of Renewable Energy (RE) for preservice teachers studying in higher education.

Focus on Objectives

During the project, digital learning materials and other resources will be produced as well as the Renewable Energy-related curriculum for preservice teachers in higher education. Learning activities and an online portal through which ideas will be exchanged, will be created, so that future teachers improve their professional and pedagogical knowledge level about RE and adhere to a community of practice.

Project Results

1. Development of Curriculum and Training Program for Preservice Teachers.
2. Development of Multimedia Based Online Learning Content and Material.
3. Development of Assessment Tool for Preservice Teachers.
4. Development of Online Platform Content, Best Practices Pool

Learning, Teaching or Training Activities

The learning, teaching and training activities designed and materials produced will be used and tested during specific workshops. The preservice teachers will be supported through the use of design-oriented (STEAM-based) activities for RE in their professional lives, with the guidance of the trainers (academics).

